iOS 7 Tech Talks 2013

San Francisco New York Tokyo Shanghai Berlin London

These are confidential sessions—please refrain from streaming, blogging, or taking pictures

Hidden iOS 7 Development Gems

Paul Marcos
App Services Evangelist
pmarcos@apple.com

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Push updates

AirDrop from Activity sheet

Add to Readlng List

Ranking-style leaderboards

Game score signing

3D map view

Background asset downloads

UIKit Dynamics

Game controllers

Inter-app audio

Map snapshots

Expanded Bluetooth LE profile support

Dynamic type size

Guided Access API

Sprite Kit

Multipeer connectivity

Directions API

60fps video capture

Custom video compositors

New turn-based game modes

iBeacons

New Core Image filters

Multitasking

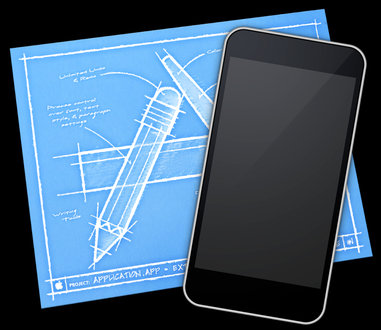
Authenticated Game Center players

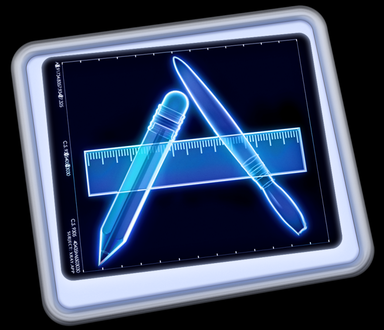
Geodesic polylines

Automatic Configuration

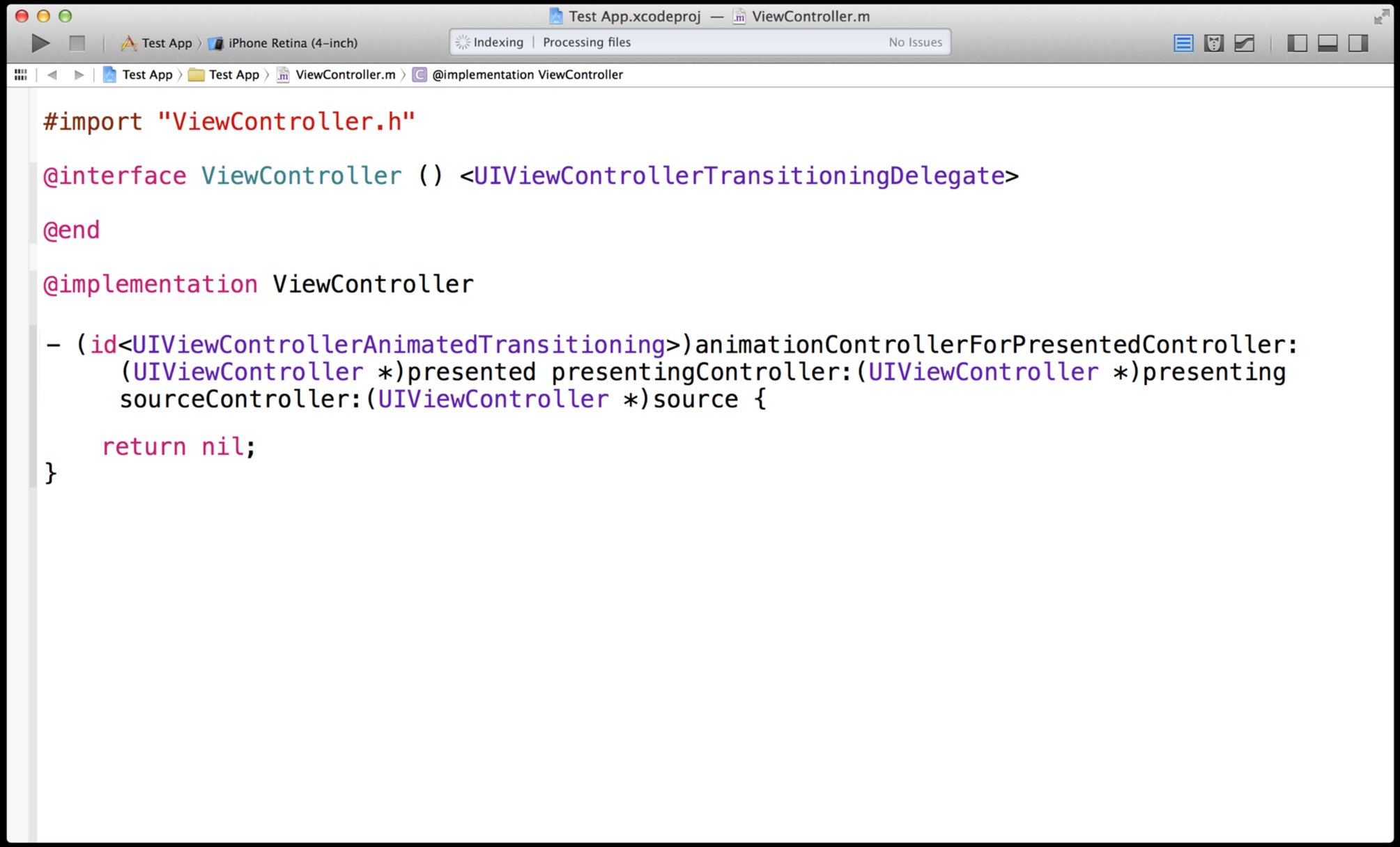
Map tile overlays

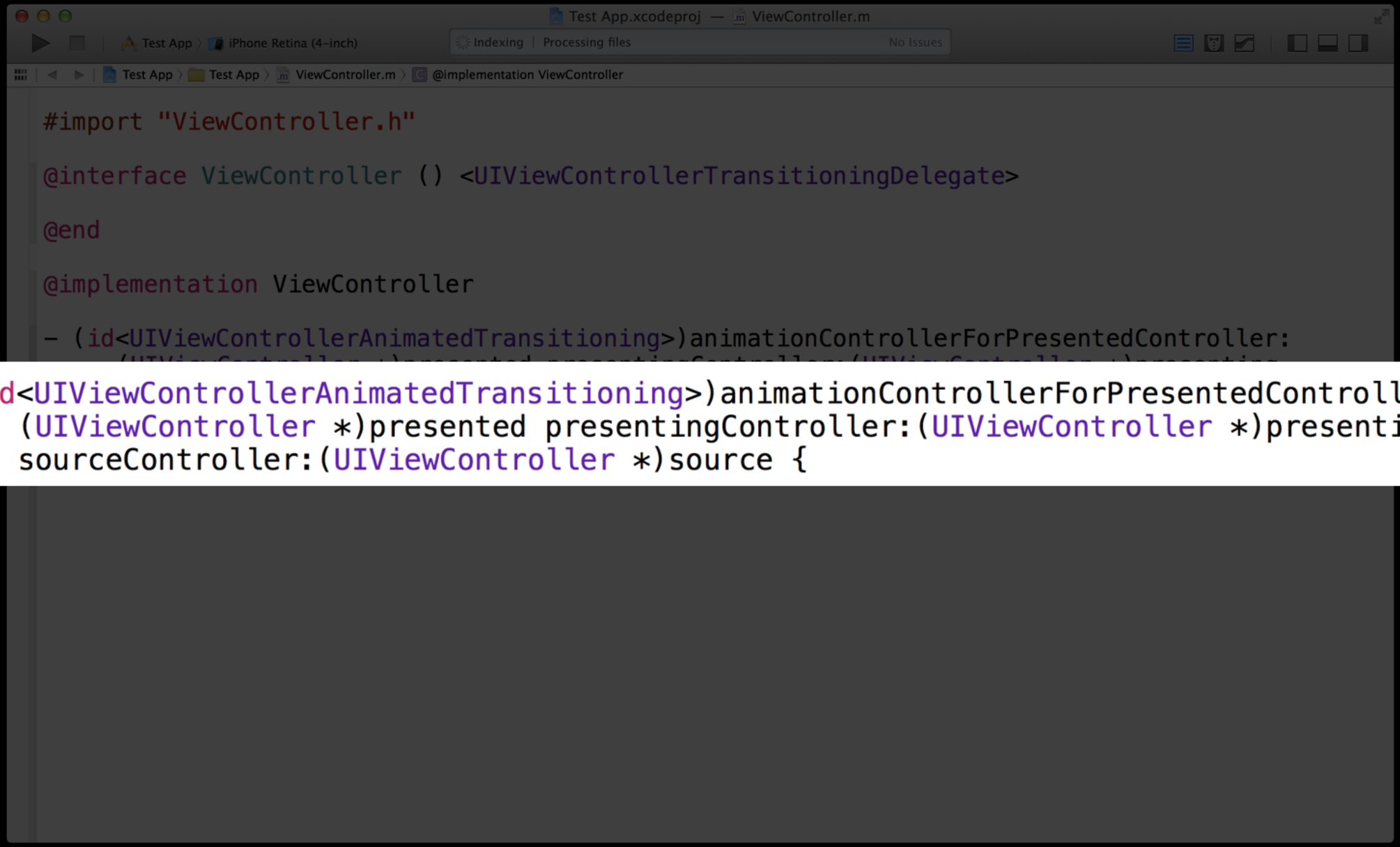
Technique





Method Completion


Test App.xcodeproj — ViewController.m
Test App
iPhone Retina (4-inch)
Indexing | Processing files
No Issues
Test App
Test App
ViewController.m
@implementation ViewController
#import "ViewController.h"
@interface ViewController () <UIViewControllerTransitioningDelegate>
@end
@implementation ViewController
- (id<UIViewControllerAnimatedTransitioning>)animationControllerForPresentedController:
(UIViewController *)presented presentingController:(UIViewController *)presenting
sourceController:(UIViewController *)source {
return nil;
}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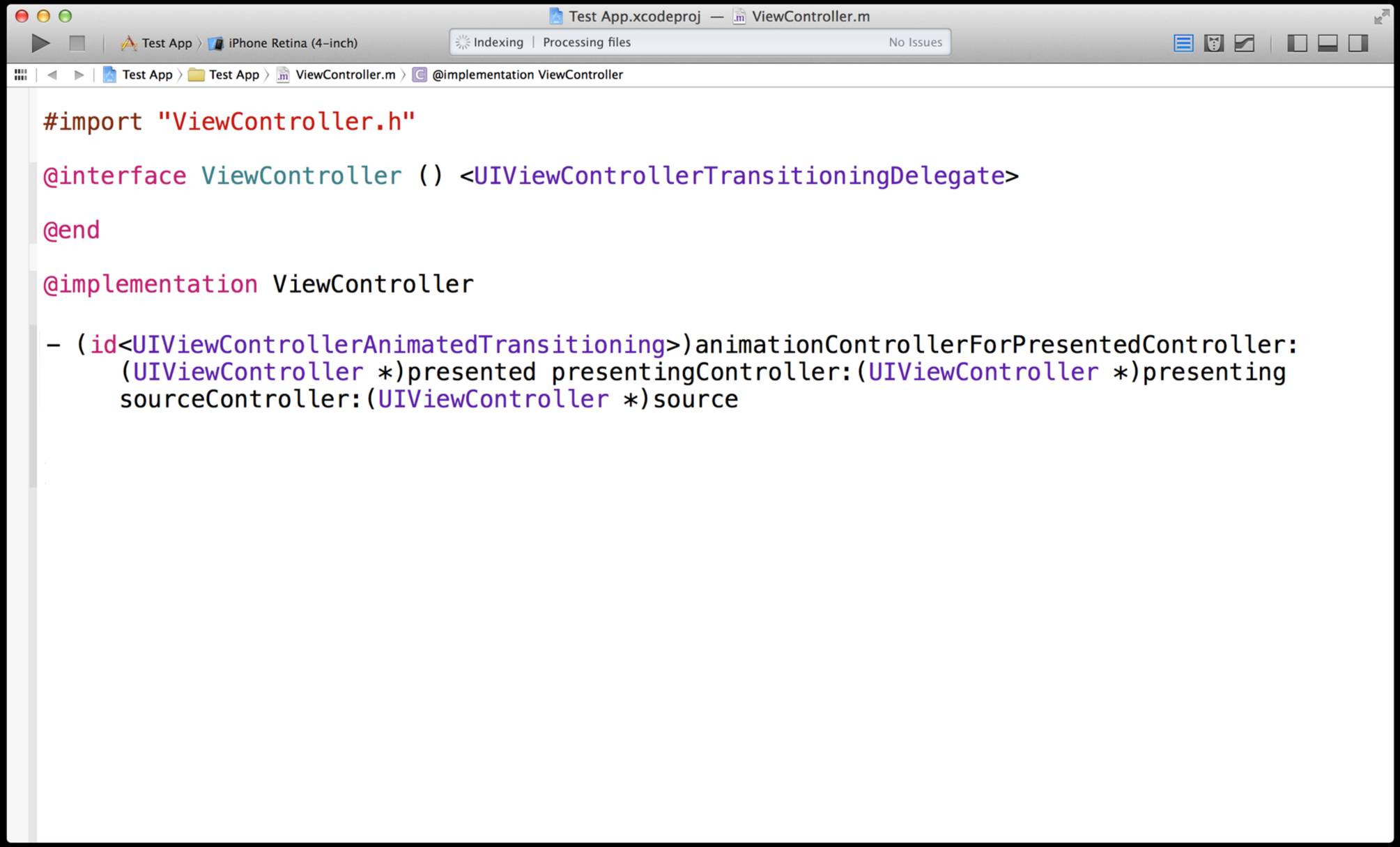
@interface ViewController () <UIViewControllerTransitioningDelegate>
@end
@implementation ViewController

Test App.xcodeproj — ViewController.m
Test App
iPhone Retina (4-inch)
Indexing | Processing files
1
Test App
Test App
ViewController.m
@implementation ViewController
#import "ViewController.h"
@interface ViewController () <UIViewControllerTransitioningDelegate>
@end
@implementation ViewController
- anim

Test App.xcodeproj — ViewController.m
Test App 〉 iPhone Retina (4-inch)
Indexing | Processing files
No Issues
Test App 〉 Test App 〉 ViewController.m 〉 @implementation ViewController
#import "ViewController.h"
@interface ViewController () <UIViewControllerTransitioningDelegate>
@end
@implementation ViewController
- animationControllerForPresentedController:presentingController:sourceController:
(id<UIViewControllerAnimatedTransitioning>)animationControllerForDismissedController:(
(id<UIViewControllerAnimatedTransitioning>)animationControllerForPresentedController:(
(void)animationDidStart:(CAAnimation *)anim
(void)animationDidStop:(CAAnimation *)anim finished:(BOOL)flag
Called when a transition requires the animator object to use when presenting a view controller. More…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@end
@implementation ViewController
- (id<UIViewControllerAnimatedTransitioning>)animationControllerForPresentedController:
(UIViewController *)presented presentingController:(UIViewController *)presenting
sourceController:(UIViewController *)source

Xcode

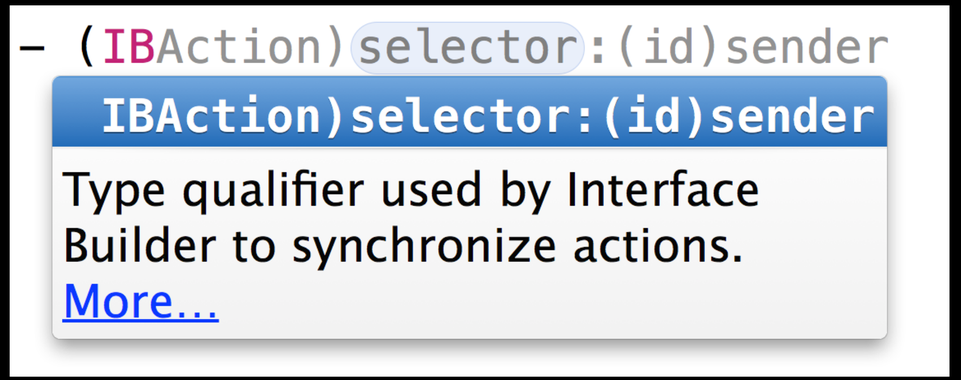
Method completion

- Type - or +
  - Begin typing method *name*
  - Omit return value
- Add IBAction methods quickly

Xcode

Method completion

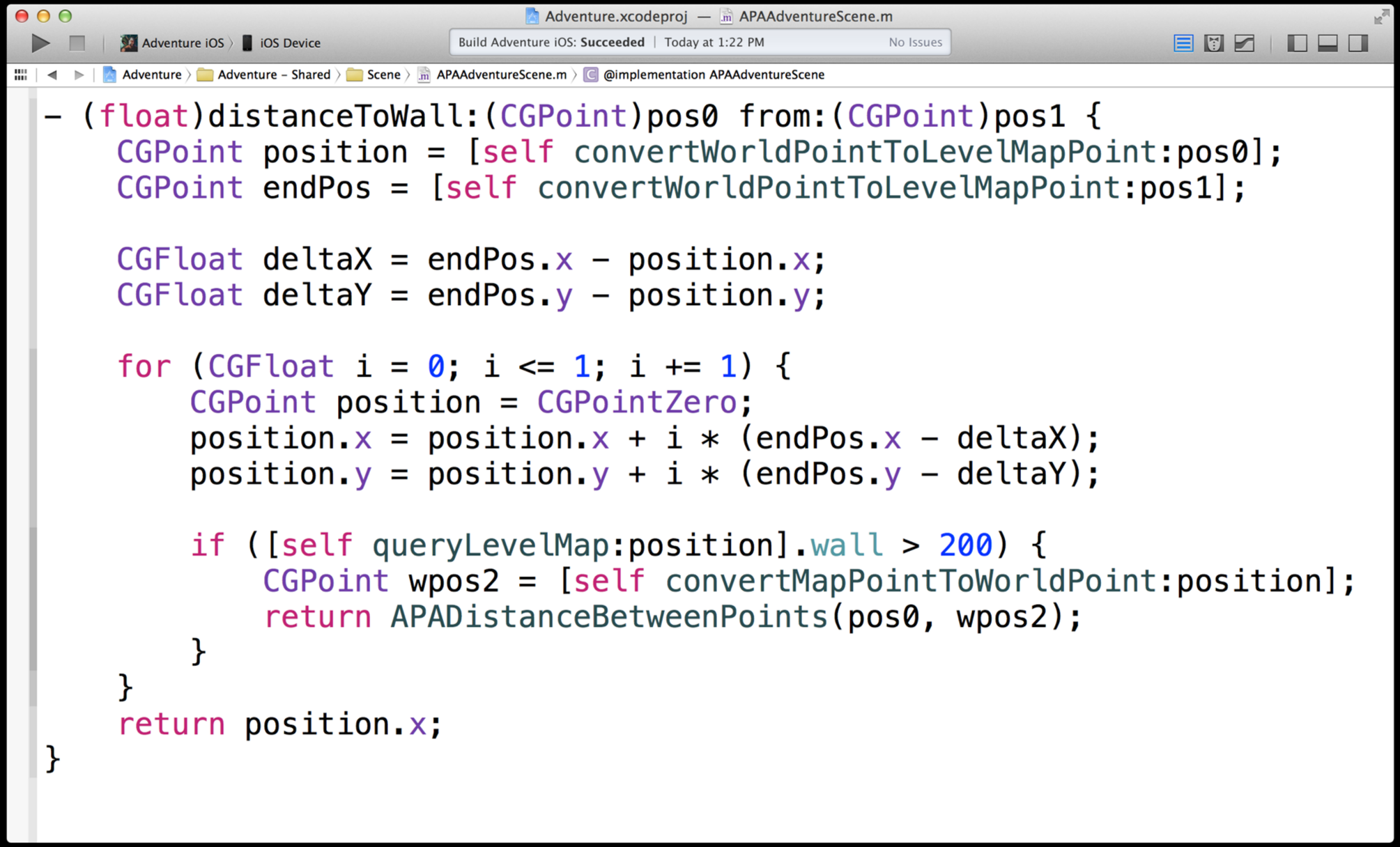
- Type - or +
  - Begin typing method *name*
  - Omit return value
- Add IBAction methods quickly

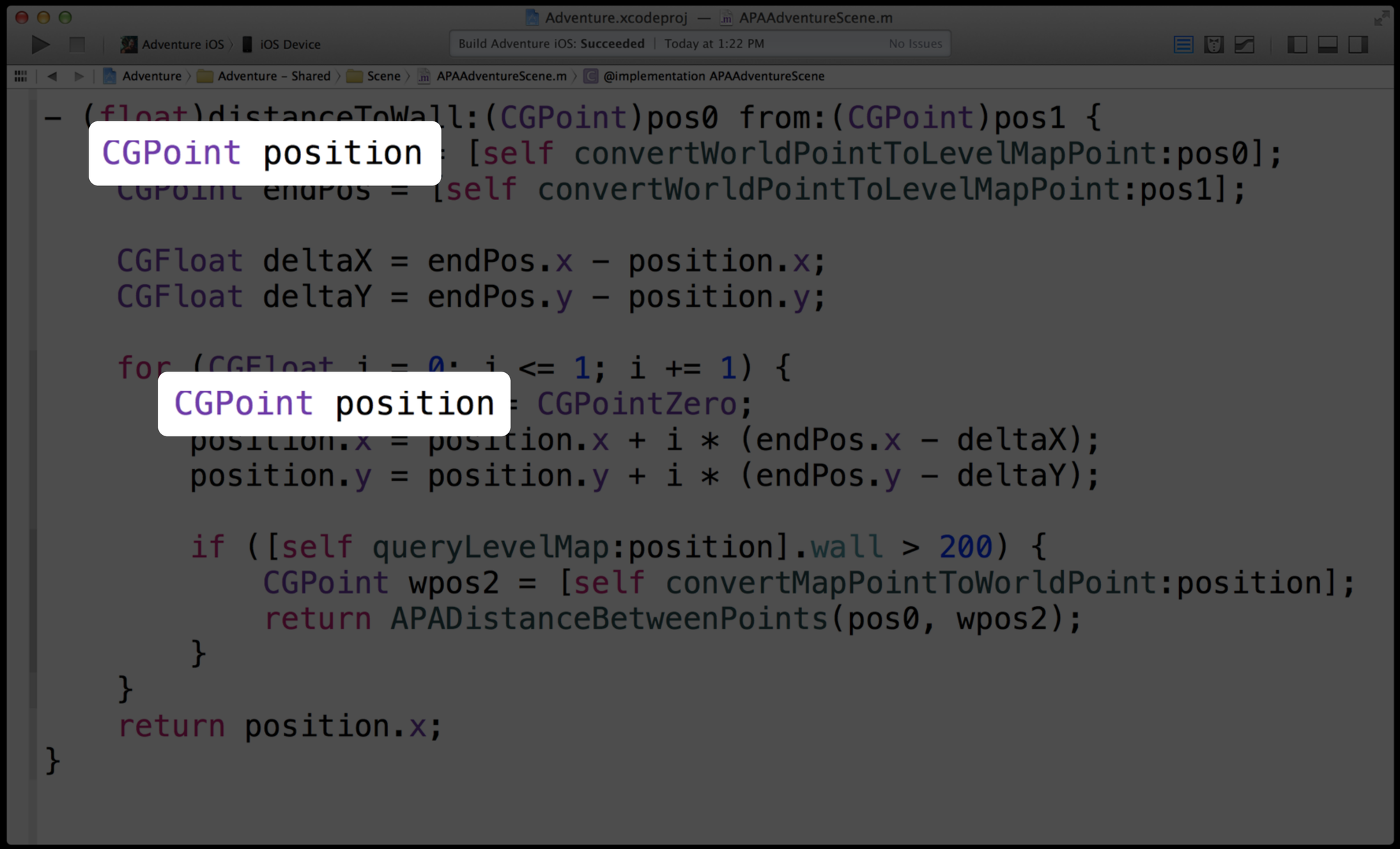


Method Completion

Method Completion

Edit in Scope


Adventure.xcodeproj — APAAdventureScene.m
Adventure iOS
iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
Adventure
Adventure – Shared
Scene
APAAdventureScene.m
@implementation APAAdventureScene
- (float)distanceToWall:(CGPoint)pos0 from:(CGPoint)pos1 {
CGPoint position = [self convertWorldPointToLevelMapPoint:pos0];
CGPoint endPos = [self convertWorldPointToLevelMapPoint:pos1];
CGFloat deltaX = endPos.x - position.x;
CGFloat deltaY = endPos.y - position.y;
for (CGFloat i = 0; i <= 1; i += 1) {
CGPoint position = CGPointZero;
position.x = position.x + i * (endPos.x - deltaX);
position.y = position.y + i * (endPos.y - deltaY);
if ([self queryLevelMap:position].wall > 200) {
CGPoint wpos2 = [self convertMapPointToWorldPoint:position];
return APADistanceBetweenPoints(pos0, wpos2);
}
}
return position.x;
}


Adventure.xcodeproj — APAAdventureScene.m
Adventure iOS › iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
Adventure › Adventure – Shared › Scene › APAAdventureScene.m › @implementation APAAdventureScene
CGPoint position
CGPoint position
- (float)distanceToWall:(CGPoint)pos0 from:(CGPoint)pos1 {
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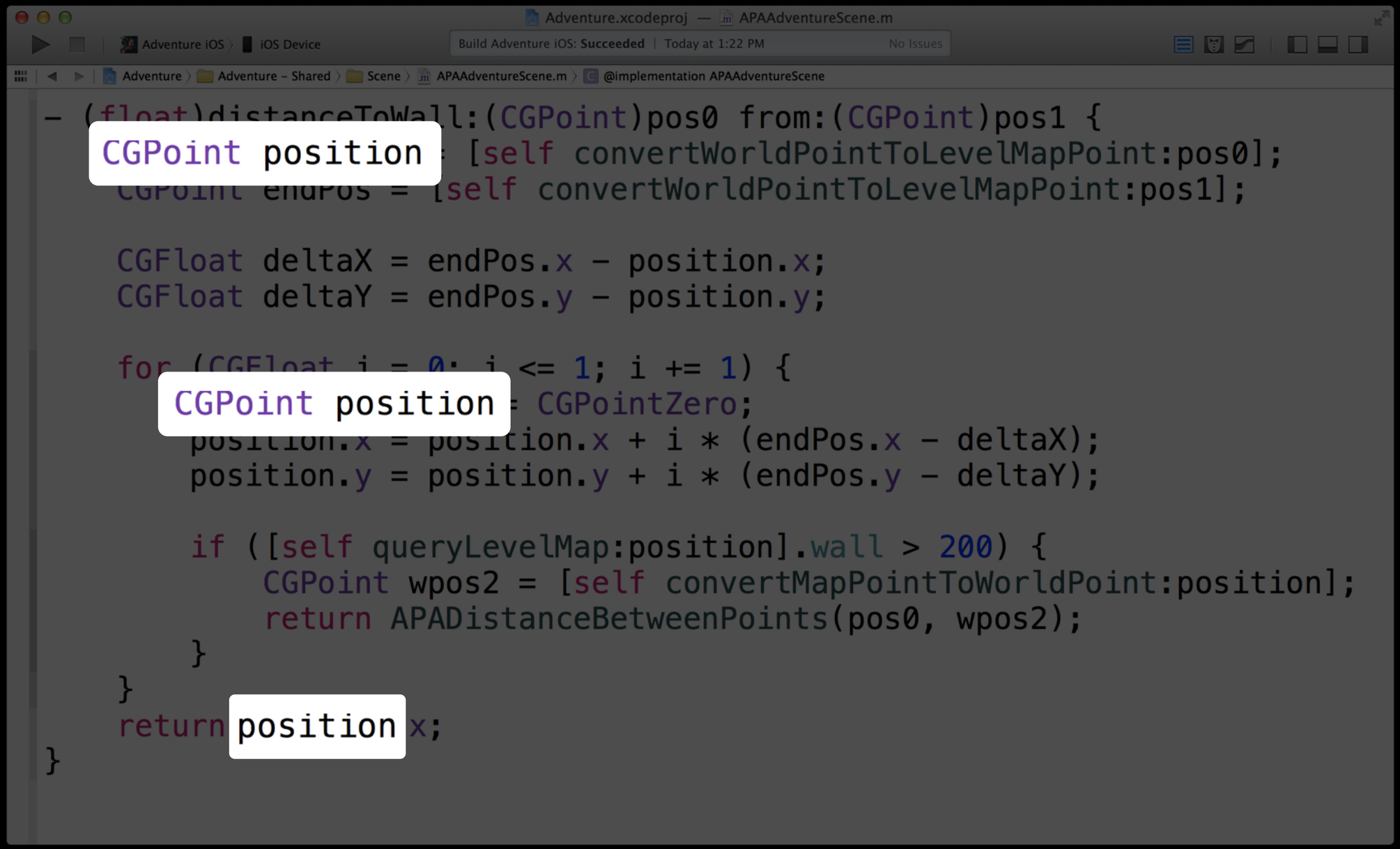
}
}
return position.x;
}


Adventure.xcodeproj — APAAdventureScene.m
Adventure iOS › iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
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position.y = position.y + i * (endPos.y - deltaY);
if ([self queryLevelMap:position].wall > 200) {
CGPoint wpos2 = [self convertMapPointToWorldPoint:position];
return APADistanceBetweenPoints(pos0, wpos2);
}
}
return position.x;
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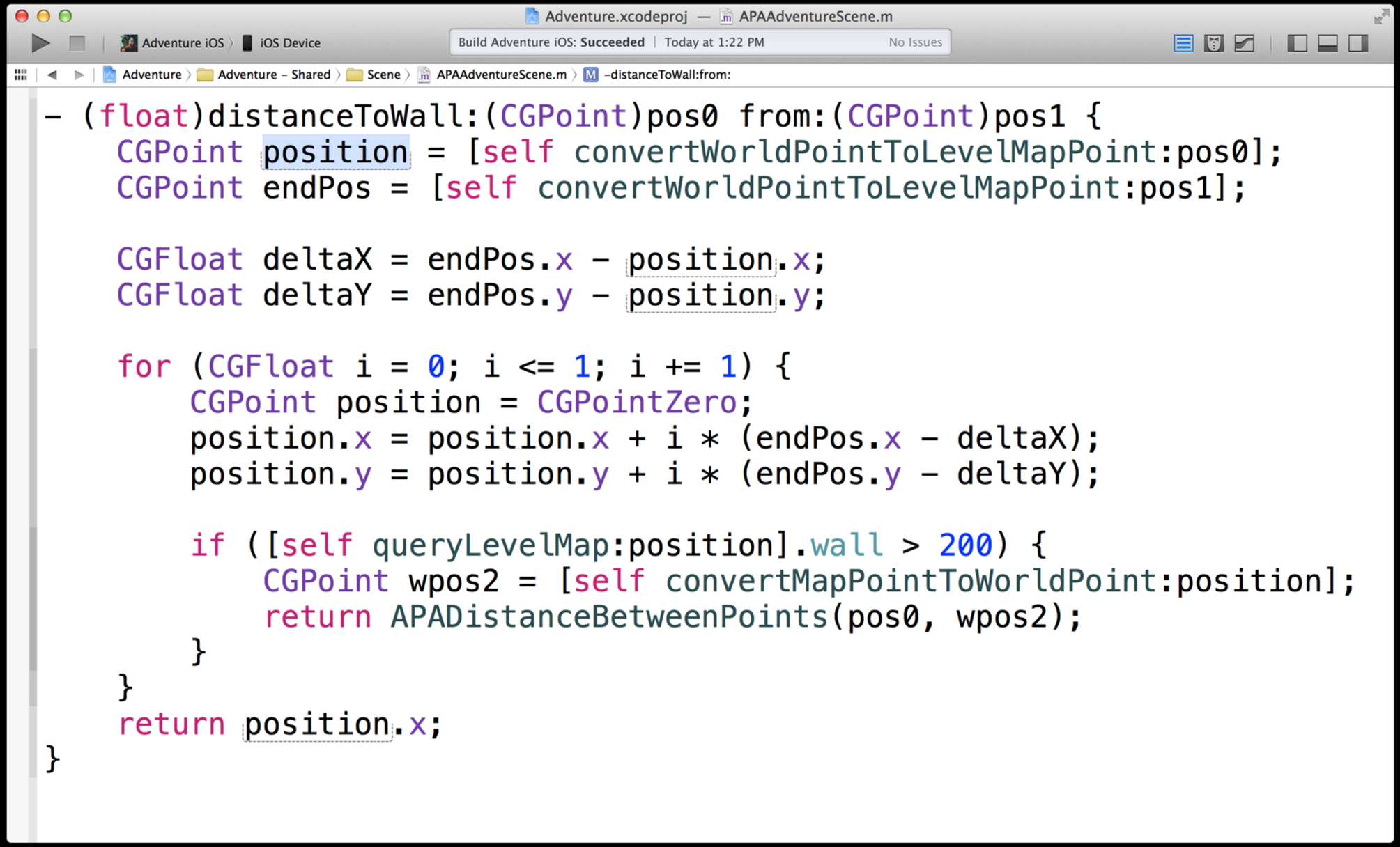
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Adventure iOS
iOS Device
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Adventure - Shared
Scene
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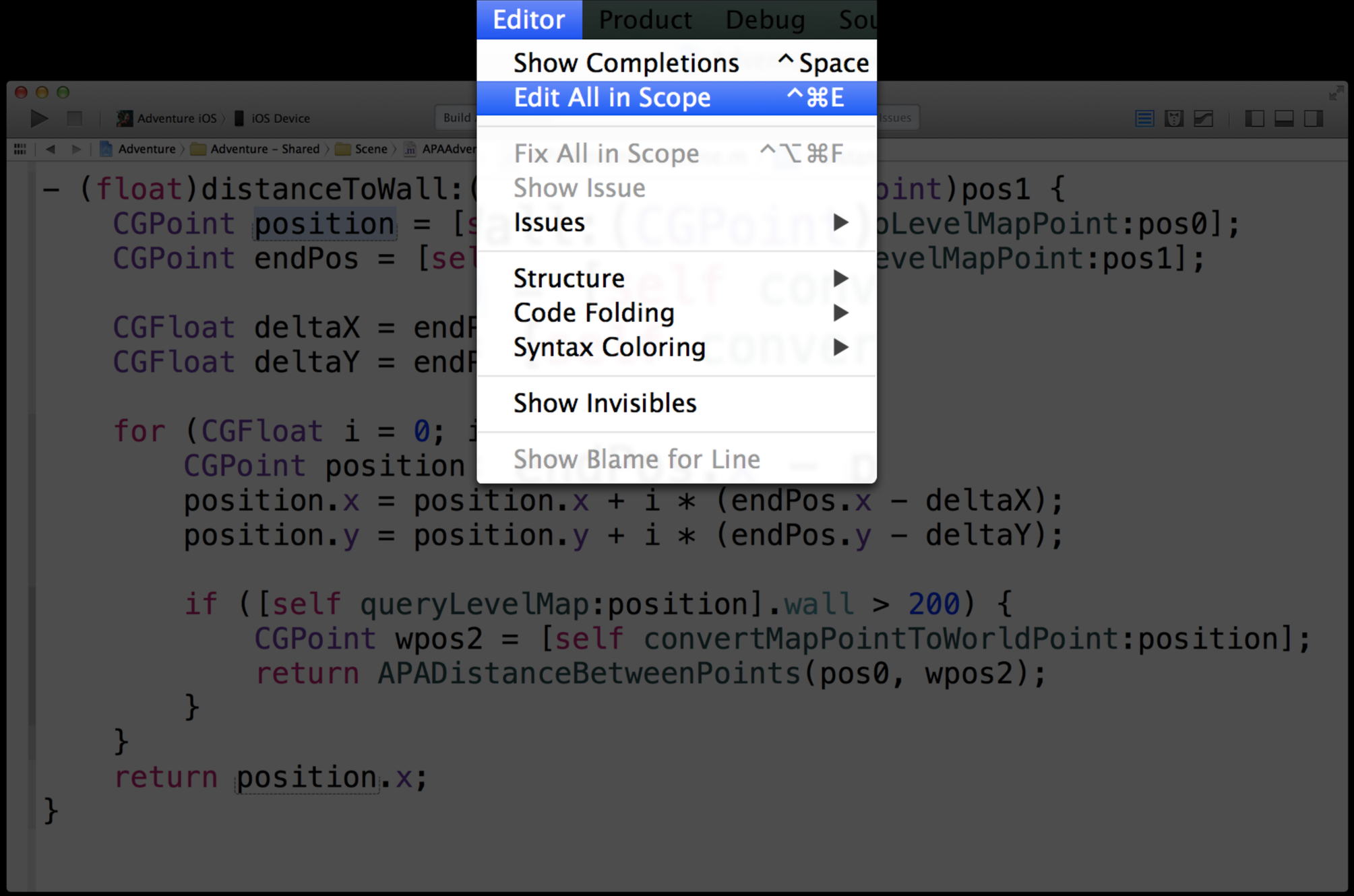
Editor
Product
Debug
Show Completions ^Space
Edit All in Scope ^⌘E
Fix All in Scope ^⌥⌘F
Show Issue
Issues
Structure
Code Folding
Syntax Coloring
Show Invisibles
Show Blame for Line
Adventure iOS
iOS Device
Adventure
Adventure – Shared
Scene
- (float)distanceToWall:(
CGPoint position = [
CGPoint endPos = [sel
CGFloat deltaX = endP
CGFloat deltaY = endP
for (CGFloat i = 0; i
CGPoint position
position.x = position.x + i * (endPos.x - deltaX);
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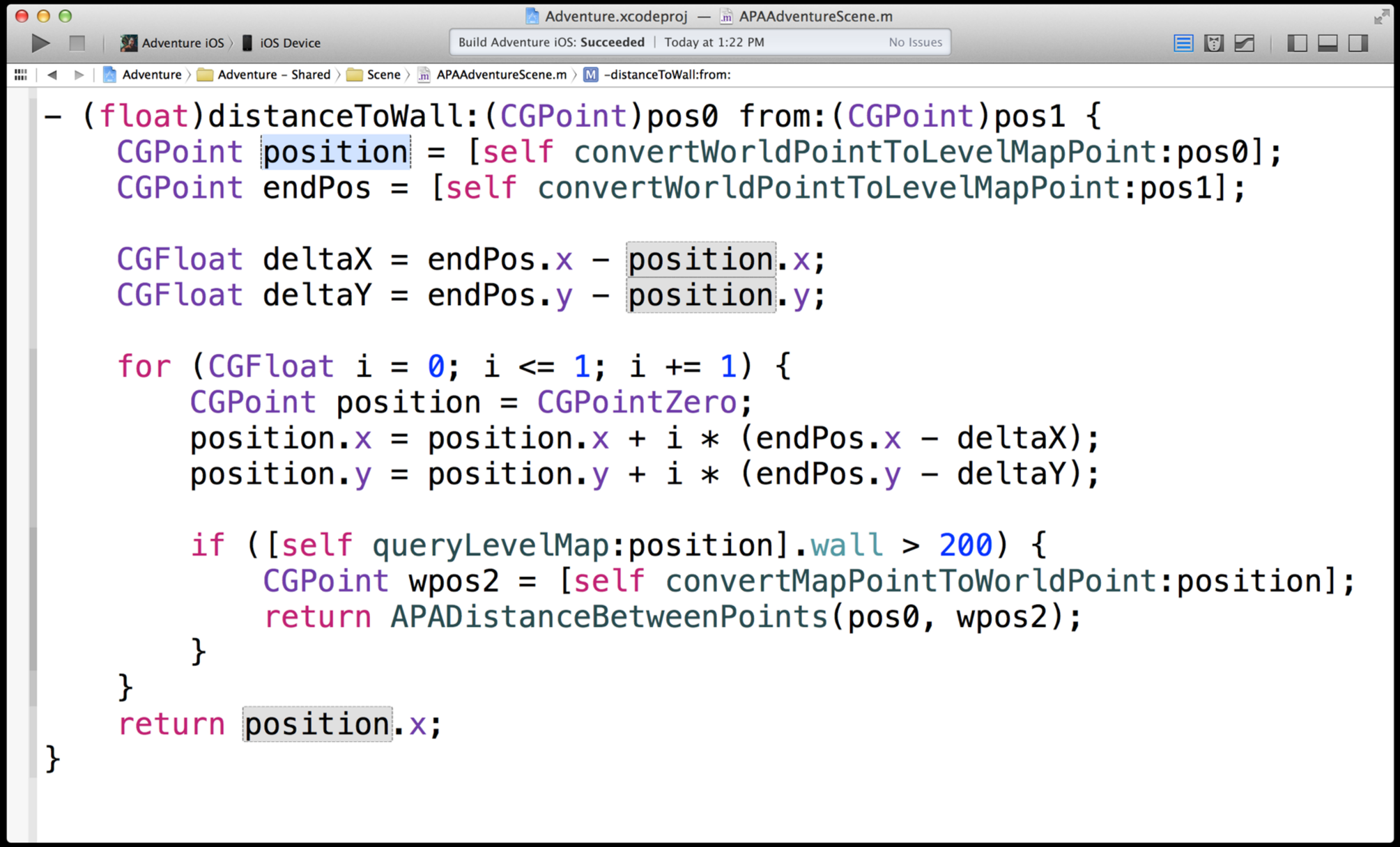
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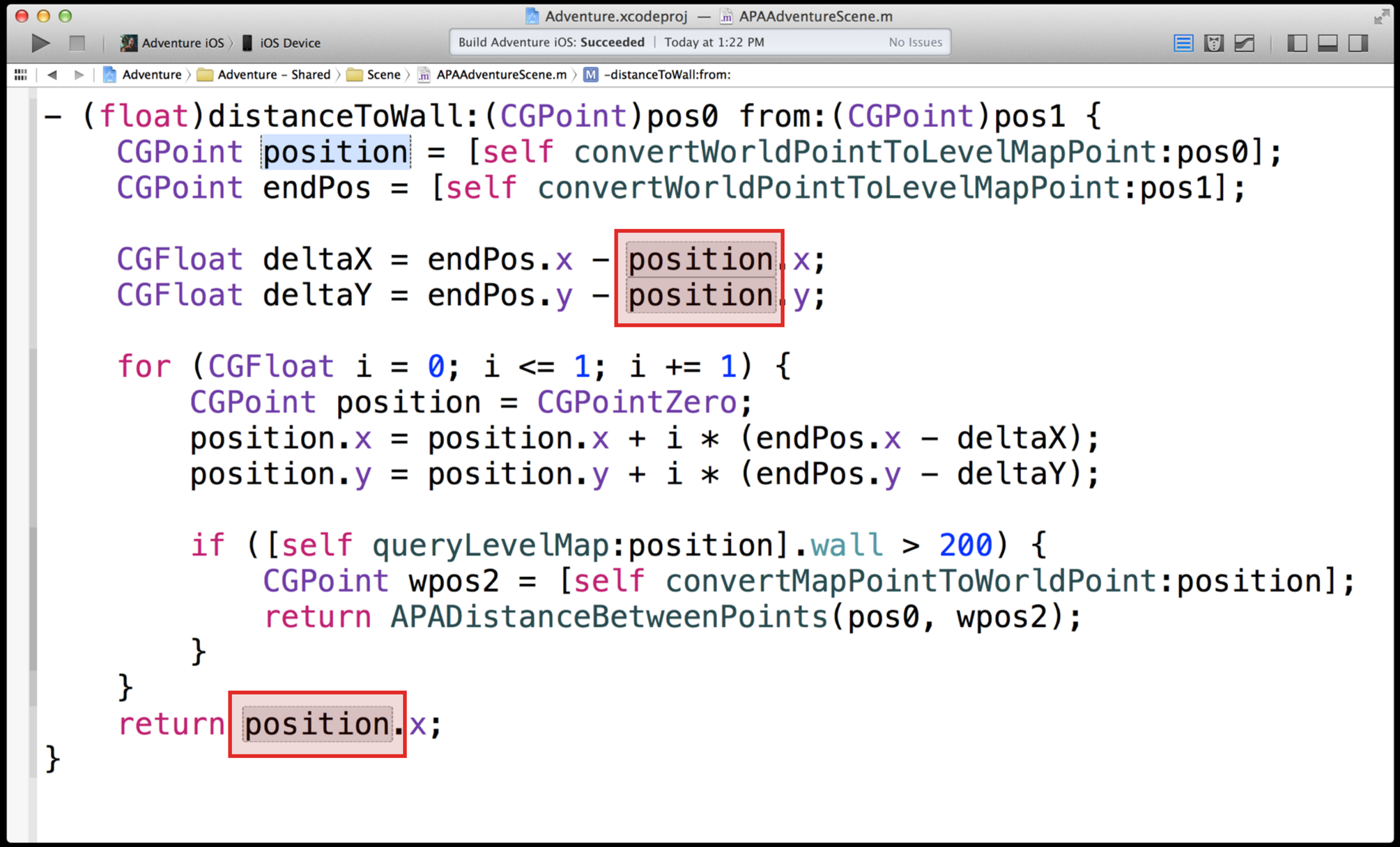
if ([self queryLevelMap:position].wall > 200) {
CGPoint wpos2 = [self convertMapPointToWorldPoint:position];
return APADistanceBetweenPoints(pos0, wpos2);
}
}
return position.x;
}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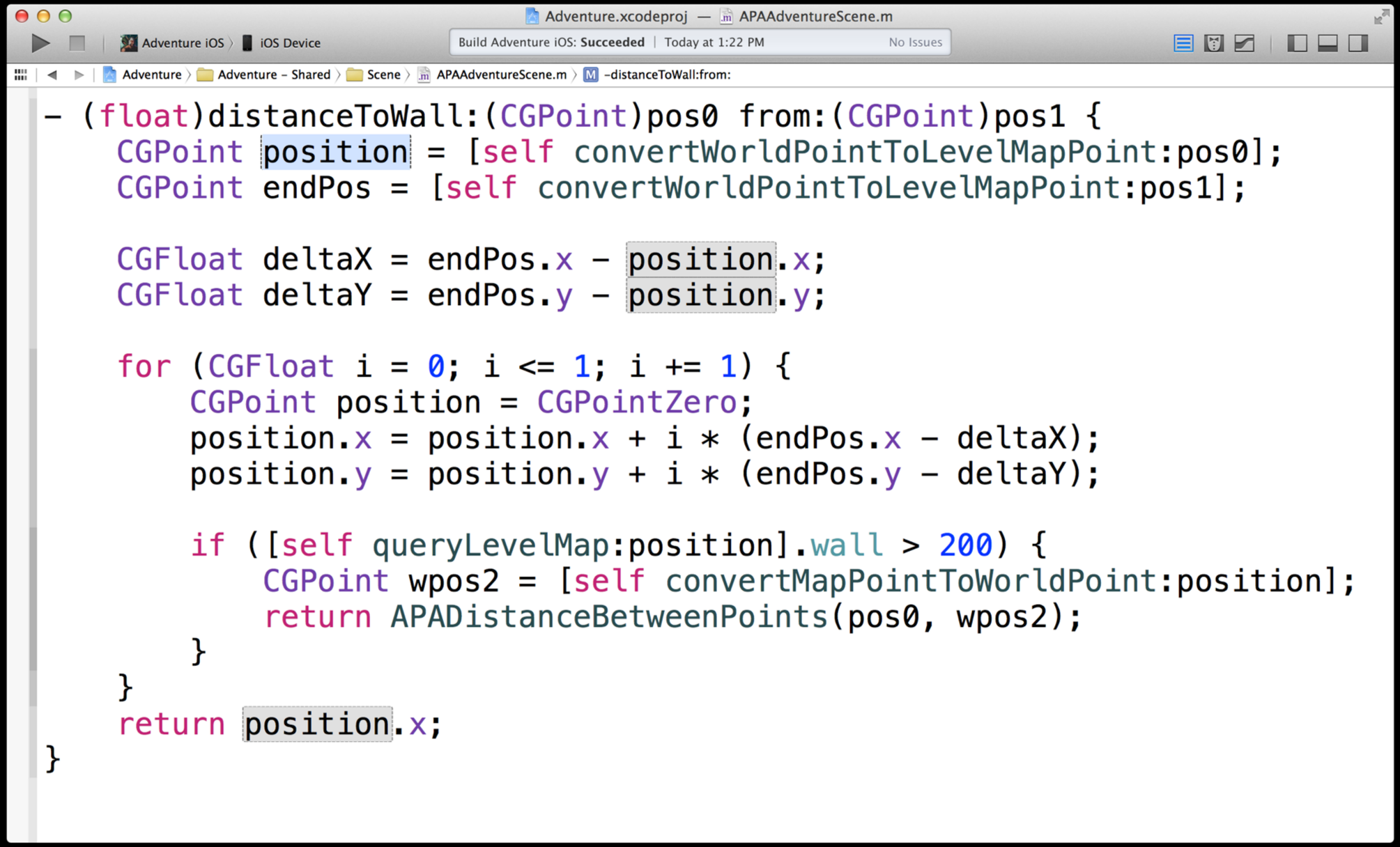
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}
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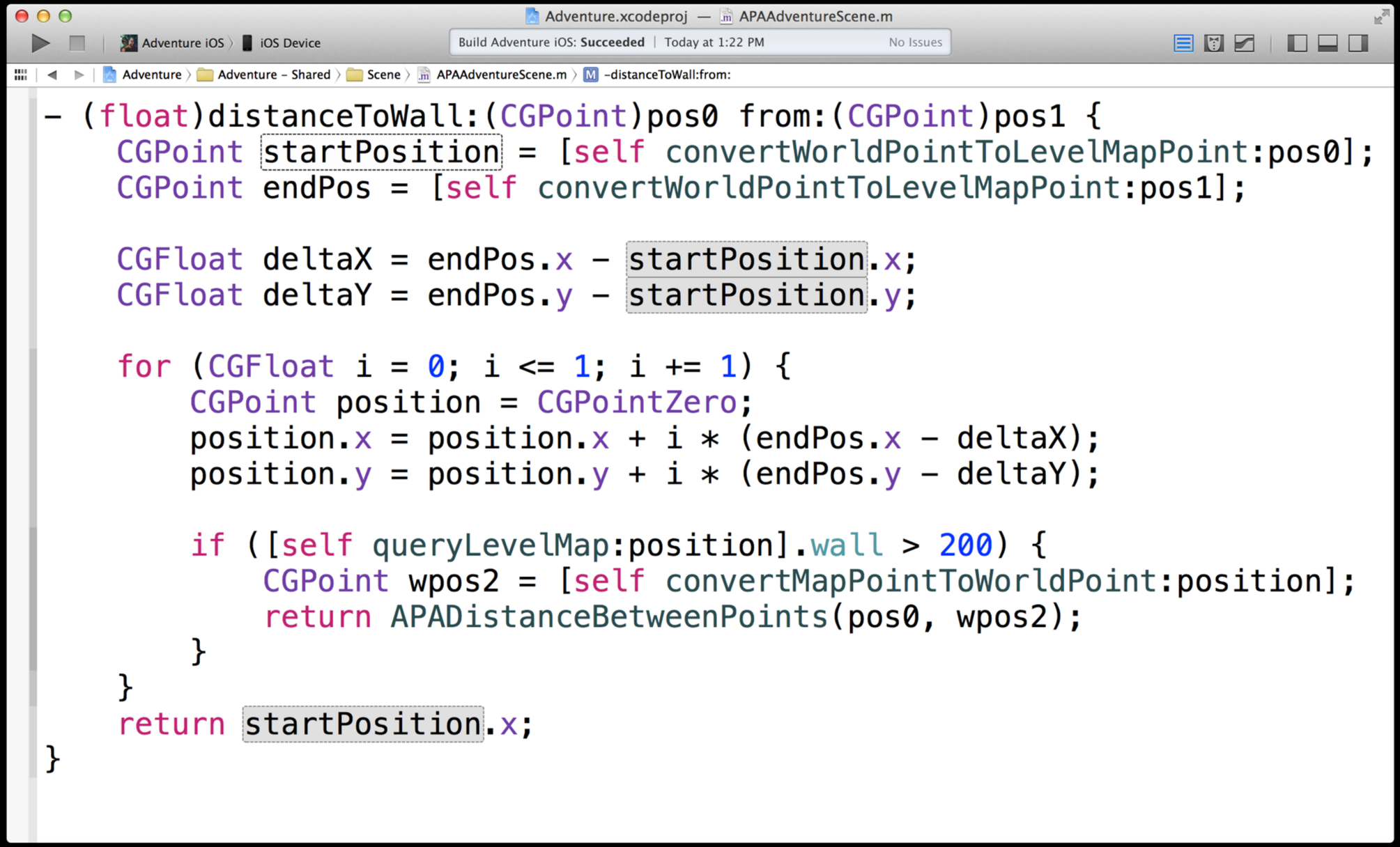
}


Adventure.xcodeproj — APAAdventureScene.m
Adventure iOS
iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
Adventure
Adventure – Shared
Scene
APAAdventureScene.m
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- (float)distanceToWall:(CGPoint)pos0 from:(CGPoint)pos1 {
CGPoint startPosition = [self convertWorldPointToLevelMapPoint:pos0];
CGPoint endPos = [self convertWorldPointToLevelMapPoint:pos1];
CGFloat deltaX = endPos.x - startPosition.x;
CGFloat deltaY = endPos.y - startPosition.y;
for (CGFloat i = 0; i <= 1; i += 1) {
CGPoint position = CGPointZero;
position.x = position.x + i * (endPos.x - deltaX);
position.y = position.y + i * (endPos.y - deltaY);
if ([self queryLevelMap:position].wall > 200) {
CGPoint wpos2 = [self convertMapPointToWorldPoint:position];
return APADistanceBetweenPoints(pos0, wpos2);
}
}
return startPosition.x;
}

Method Completion

Edit in Scope

Method Completion

Edit in Scope

Debug Quick Looks

Debug Quick Looks

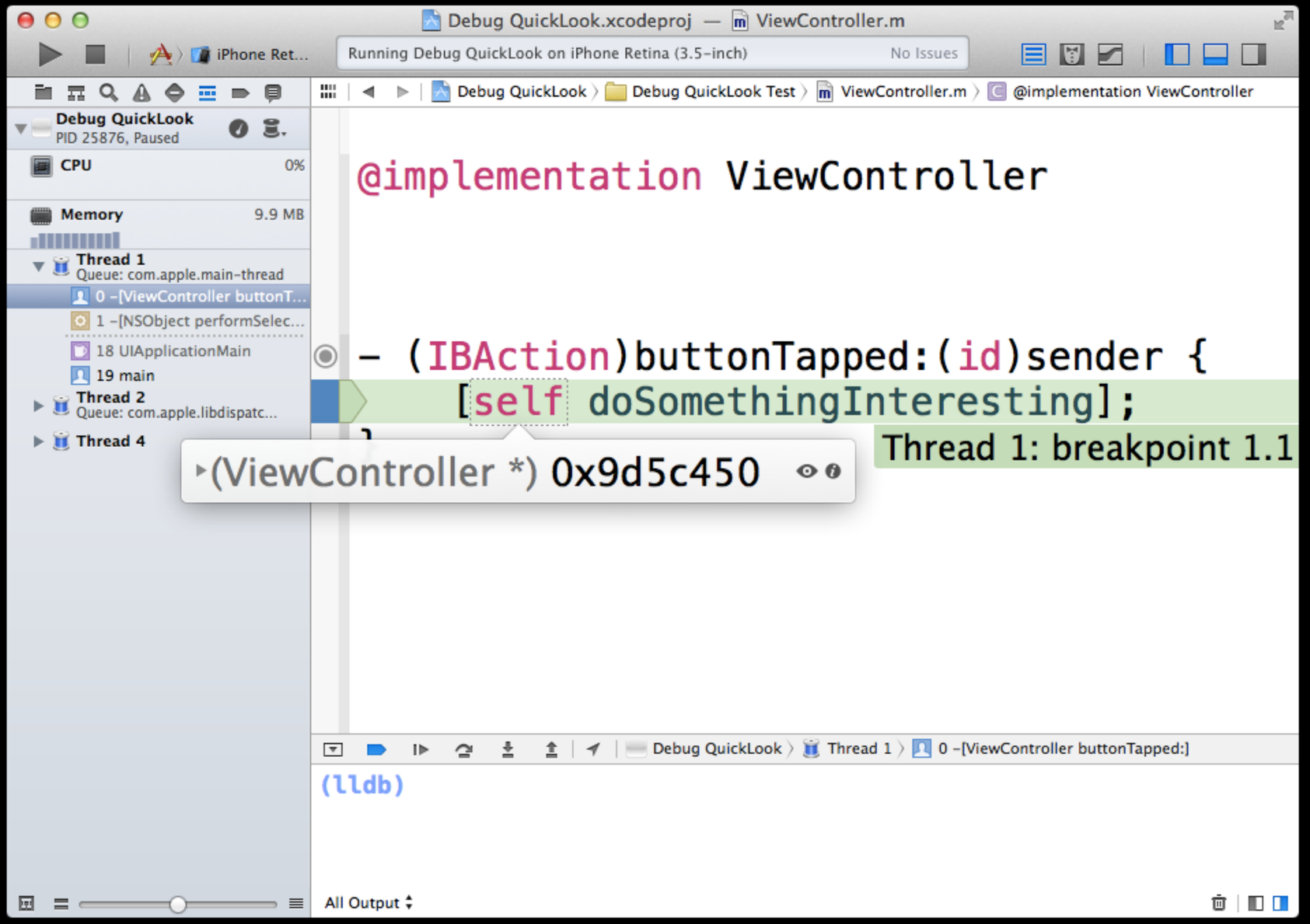
- Xcode 5.0
  - Quick Look common types in debugger
  - Strings, numbers, images, etc.

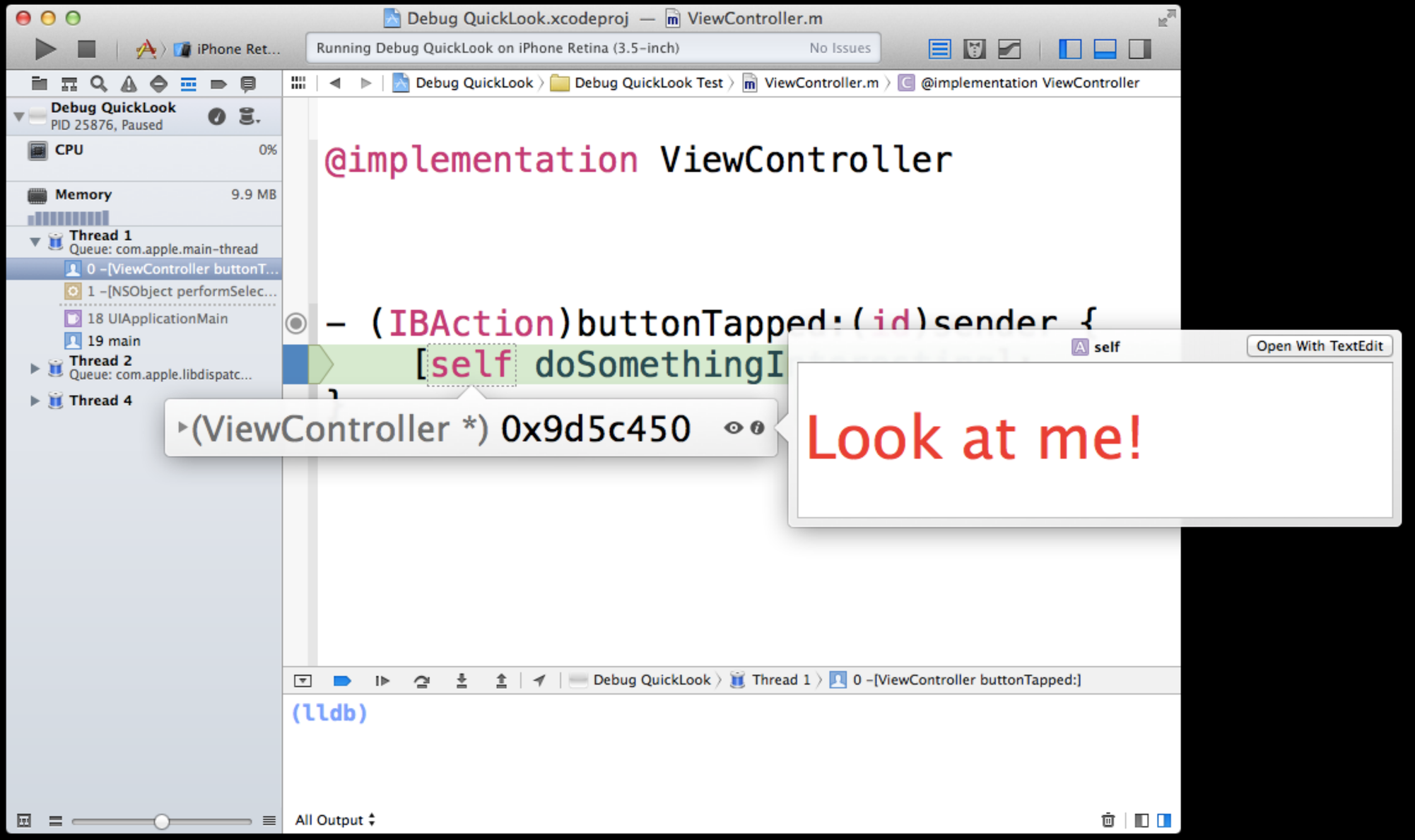
Debug Quick Looks

- Xcode 5.0
  - Quick Look common types in debugger
  - Strings, numbers, images, etc.
- Xcode 5.1
  - Expanded system types

Debug Quick Looks

- Xcode 5.0
  - Quick Look common types in debugger
  - Strings, numbers, images, etc.
- Xcode 5.1
  - Expanded system types
  - Quick Look your custom objects


Debug QuickLook.xcodeproj — ViewController.m
iPhone Ret...
Running Debug QuickLook on iPhone Retina (3.5-inch)
No Issues
Debug QuickLook
Debug QuickLook Test
ViewController.m
@implementation ViewController
Debug QuickLook
PID 25876, Paused
CPU
0%
Memory
9.9 MB
Thread 1
Queue: com.apple.main-thread
0 -[ViewController buttonT...
1 -[NSObject performSelec...
18 UIApplicationMain
19 main
Thread 2
Queue: com.apple.libdispatc...
Thread 4
@implementation ViewController
- (IBAction)buttonTapped:(id)sender {
[self doSomethingInteresting];
}
(ViewController *) 0x9d5c450
Thread 1: breakpoint 1.1
Debug QuickLook
Thread 1
0 -[ViewController buttonTapped:]
(lldb)
All Output


Debug QuickLook.xcodeproj — ViewController.m
iPhone Ret...
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No Issues
Debug QuickLook
Debug QuickLook Test
ViewController.m
@implementation ViewController
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PID 25876, Paused
CPU
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9.9 MB
Thread 1
Queue: com.apple.main-thread
0 -[ViewController buttonT...
1 -[NSObject performSelec...
18 UIApplicationMain
19 main
Thread 2
Queue: com.apple.libdispatc...
Thread 4
@implementation ViewController
- (IBAction)buttonTapped:(id)sender {
[self doSomethingI
}
(ViewController *) 0x9d5c450
self
Open With TextEdit
Look at me!
Debug QuickLook
Thread 1
0 -[ViewController buttonTapped:]
(lldb)
All Output

Debug Quick Looks

- Quick Look custom objects

```
- (id)debugQuickLookObject {



}
```

Debug Quick Looks

- Quick Look custom objects

```
- (id)debugQuickLookObject {
    NSDictionary *attributes = @{
        NSForegroundColorAttributeName : [UIColor redColor],
        NSFontAttributeName : [UIFont systemFontOfSize:48]
    };

    return [[NSAttributedString alloc] initWithString:@"Look at me!"
                attributes:attributes];
}
```

Method Completion

Edit in Scope

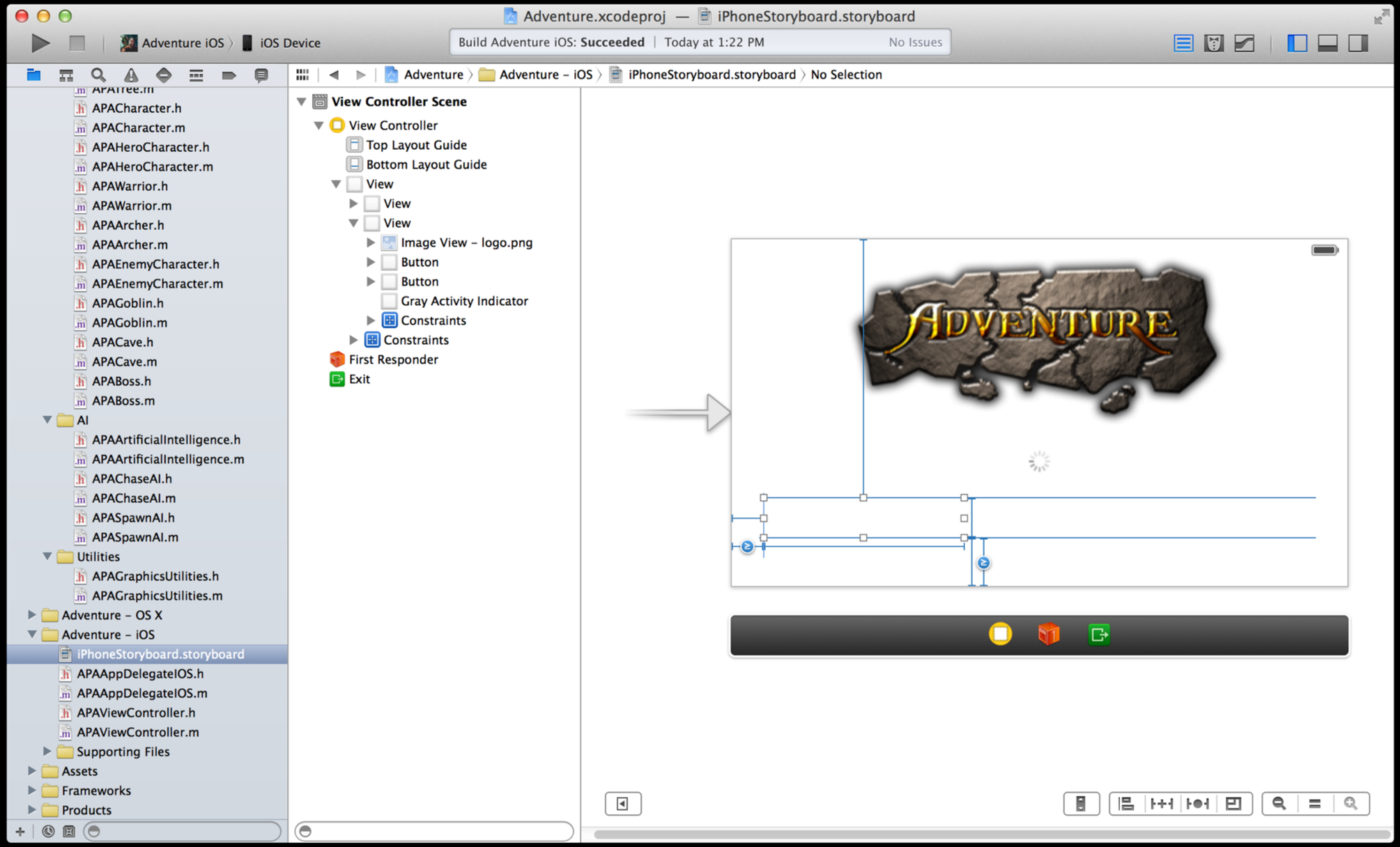
Debug Quick Looks

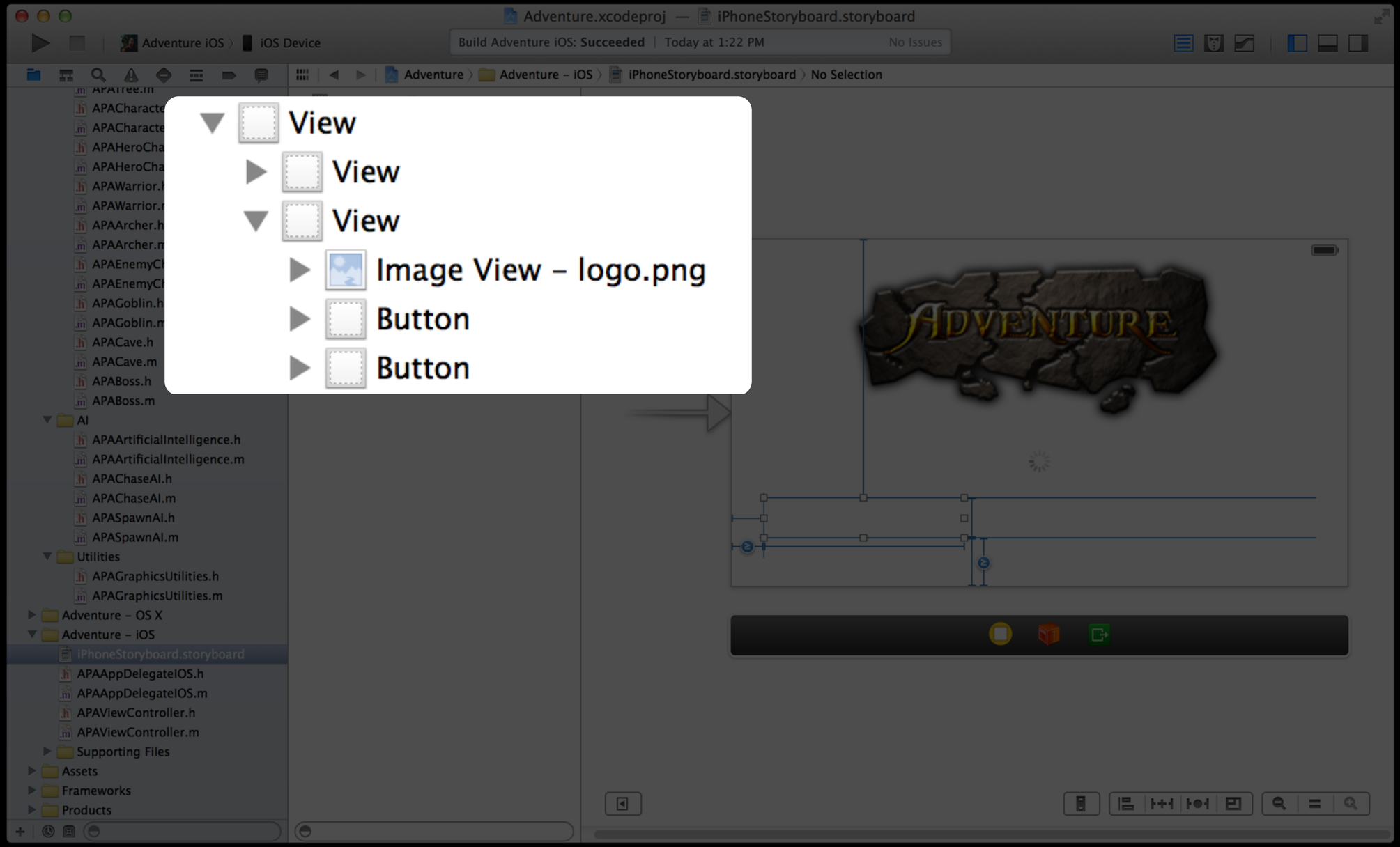
Method Completion

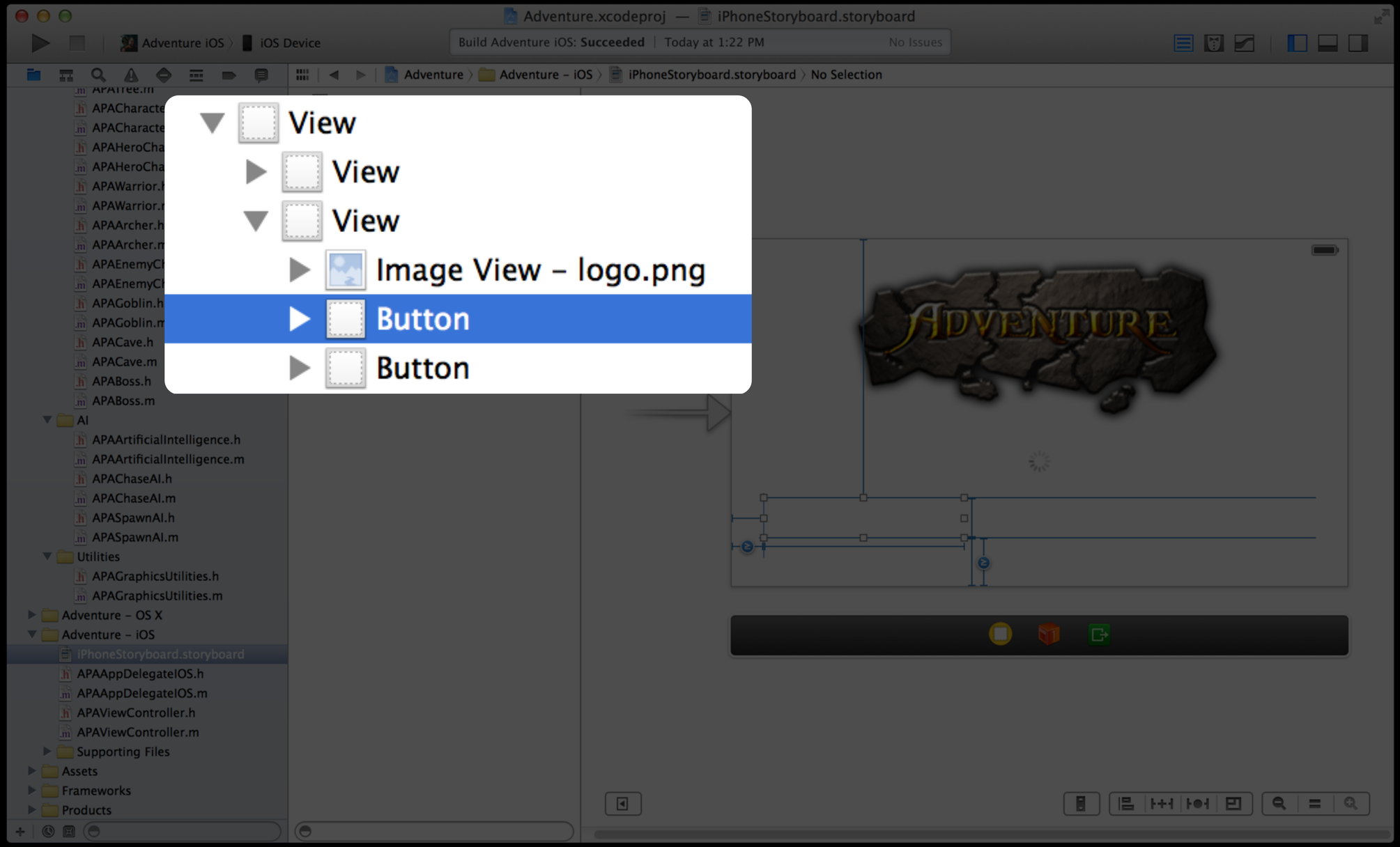
Edit in Scope

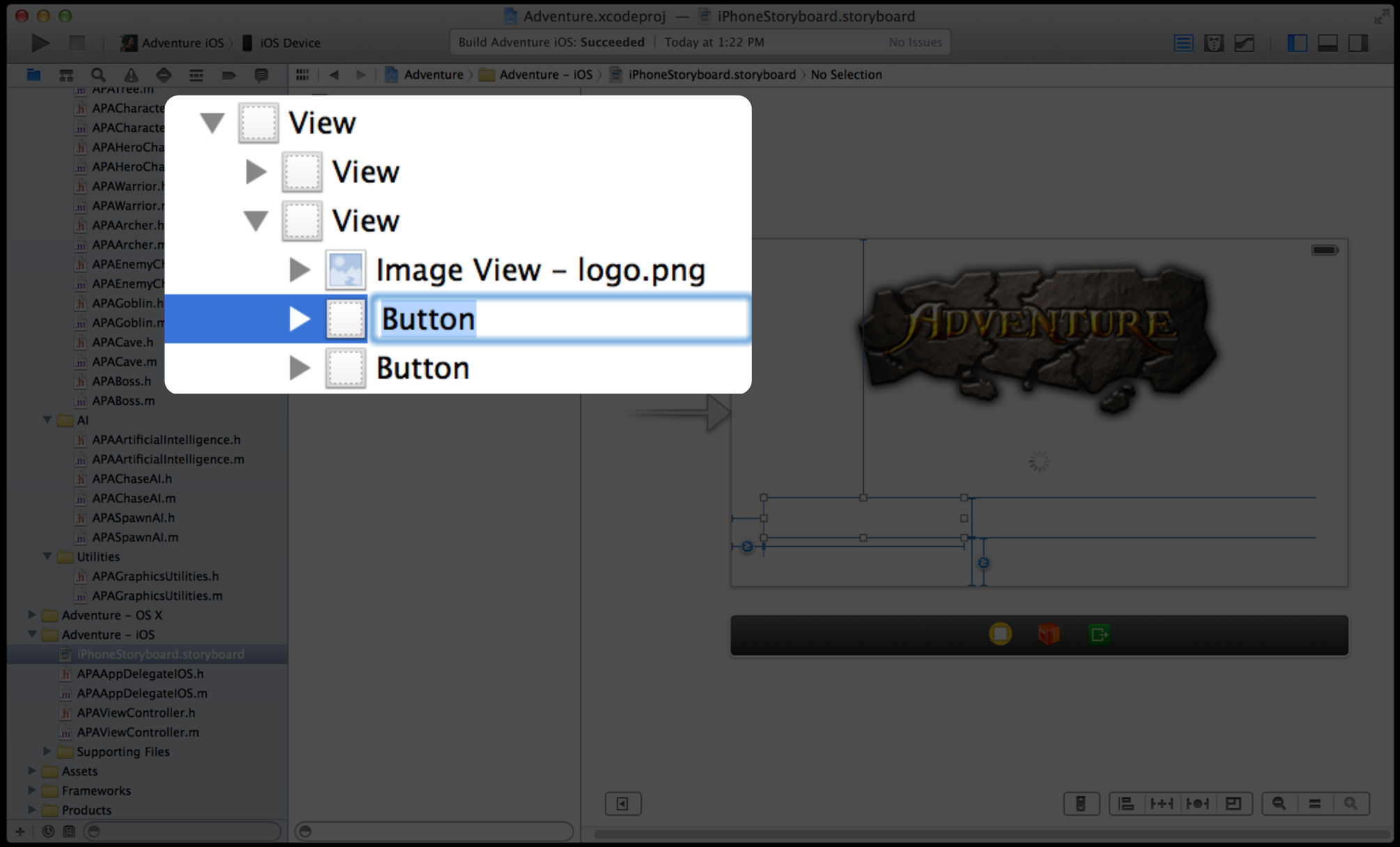
Debug Quick Looks

Rename IB Objects


Adventure.xcodeproj — iPhoneStoryboard.storyboard
Adventure iOS
iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
Adventure
Adventure – iOS
iPhoneStoryboard.storyboard
No Selection
APACharacter.h
APACharacter.m
APAHeroCharacter.h
APAHeroCharacter.m
APAWarrior.h
APAWarrior.m
APAArcher.h
APAArcher.m
APAEnemyCharacter.h
APAEnemyCharacter.m
APAGoblin.h
APAGoblin.m
APACave.h
APACave.m
APABoss.h
APABoss.m
AI
APAArtificialIntelligence.h
APAArtificialIntelligence.m
APAChaseAI.h
APAChaseAI.m
APASpawnAI.h
APASpawnAI.m
Utilities
APAGraphicsUtilities.h
APAGraphicsUtilities.m
Adventure – OS X
Adventure – iOS
iPhoneStoryboard.storyboard
APAAppDelegateIOS.h
APAAppDelegateIOS.m
APAViewController.h
APAViewController.m
Supporting Files
Assets
Frameworks
Products
View Controller Scene
View Controller
Top Layout Guide
Bottom Layout Guide
View
View
View
Image View – logo.png
Button
Button
Gray Activity Indicator
Constraints
Constraints
First Responder
Exit
ADVENTURE


Adventure.xcodeproj — iPhoneStoryboard.storyboard
Adventure iOS
iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
Adventure
Adventure – iOS
iPhoneStoryboard.storyboard
No Selection
View
View
View
Image View – logo.png
Button
Button
APACave.h
APACave.m
APABoss.h
APABoss.m
AI
APAArtificialIntelligence.h
APAArtificialIntelligence.m
APAChaseAI.h
APAChaseAI.m
APASpawnAI.h
APASpawnAI.m
Utilities
APAGraphicsUtilities.h
APAGraphicsUtilities.m
Adventure – OS X
Adventure – iOS
iPhoneStoryboard.storyboard
APAAppDelegateIOS.h
APAAppDelegateIOS.m
APAViewController.h
APAViewController.m
Supporting Files
Assets
Frameworks
Products
ADVENTURE


Adventure.xcodeproj — iPhoneStoryboard.storyboard
Adventure iOS
iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
Adventure
Adventure – iOS
iPhoneStoryboard.storyboard
No Selection
View
View
View
Image View – logo.png
Button
Button
ADVENTURE
AI
Utilities
Adventure – OS X
Adventure – iOS
Supporting Files
Assets
Frameworks
Products


Adventure.xcodeproj — iPhoneStoryboard.storyboard
Adventure iOS
iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
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Adventure – iOS
iPhoneStoryboard.storyboard
No Selection
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Image View – logo.png
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Button
APACharacte
APACharacte
APAHeroCha
APAHeroCha
APAWarrior.h
APAWarrior.m
APAArcher.h
APAArcher.m
APAEnemyCh
APAEnemyCh
APAGoblin.h
APAGoblin.m
APACave.h
APACave.m
APABoss.h
APABoss.m
AI
APAArtificialIntelligence.h
APAArtificialIntelligence.m
APAChaseAI.h
APAChaseAI.m
APASpawnAI.h
APASpawnAI.m
Utilities
APAGraphicsUtilities.h
APAGraphicsUtilities.m
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iPhoneStoryboard.storyboard
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APAViewController.m
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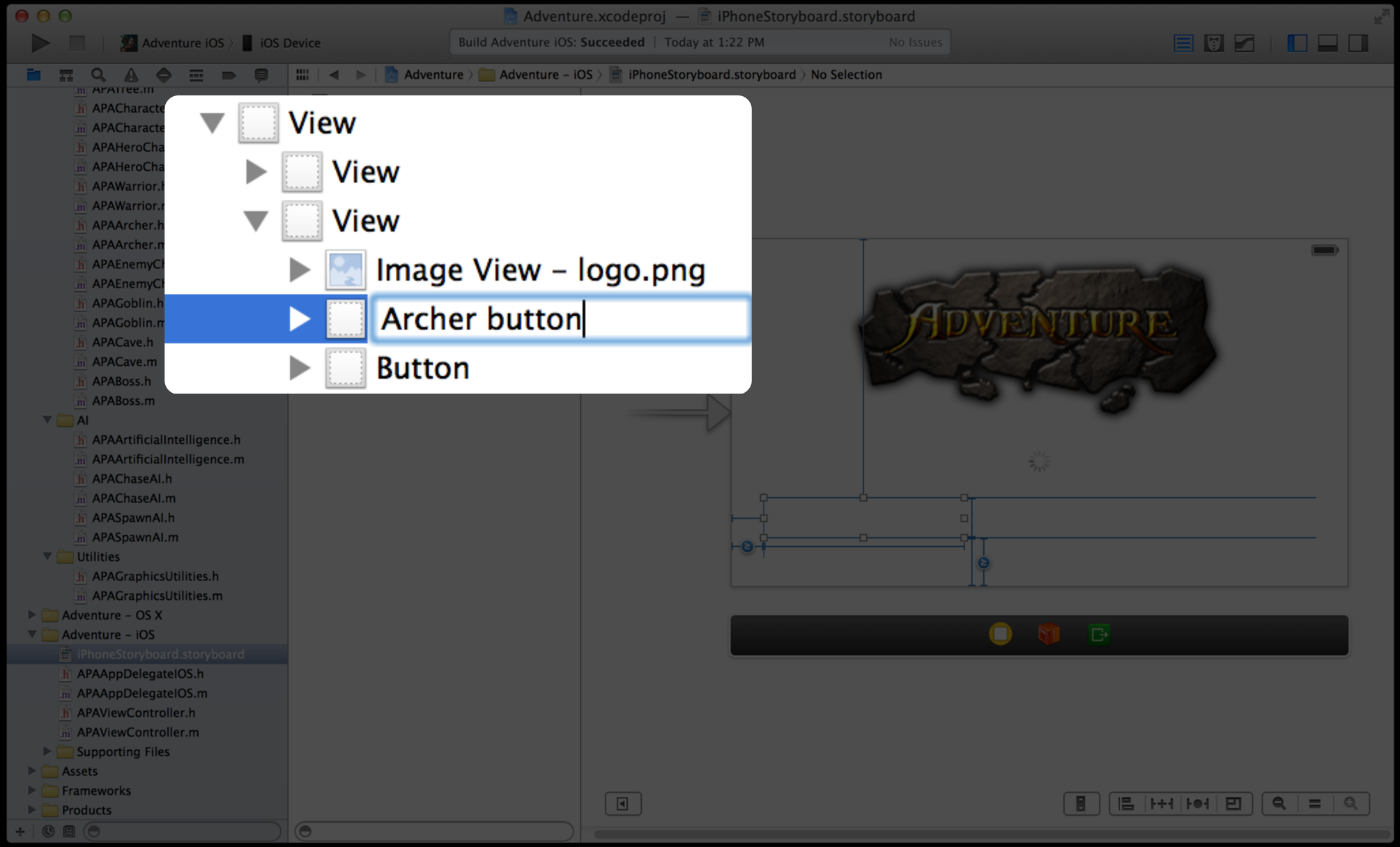
ADVENTURE


Adventure.xcodeproj — iPhoneStoryboard.storyboard
Adventure iOS
iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
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Adventure – iOS
iPhoneStoryboard.storyboard
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View
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Image View – logo.png
Archer button
Button
ADVENTURE
APAHeroCha
APAWarrior.h
APAWarrior.m
APAArcher.h
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APAGoblin.h
APAGoblin.m
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APABoss.h
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AI
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APAArtificialIntelligence.m
APAChaseAI.h
APAChaseAI.m
APASpawnAI.h
APASpawnAI.m
Utilities
APAGraphicsUtilities.h
APAGraphicsUtilities.m
Adventure – OS X
Adventure – iOS
iPhoneStoryboard.storyboard
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APAViewController.h
APAViewController.m
Supporting Files
Assets
Frameworks
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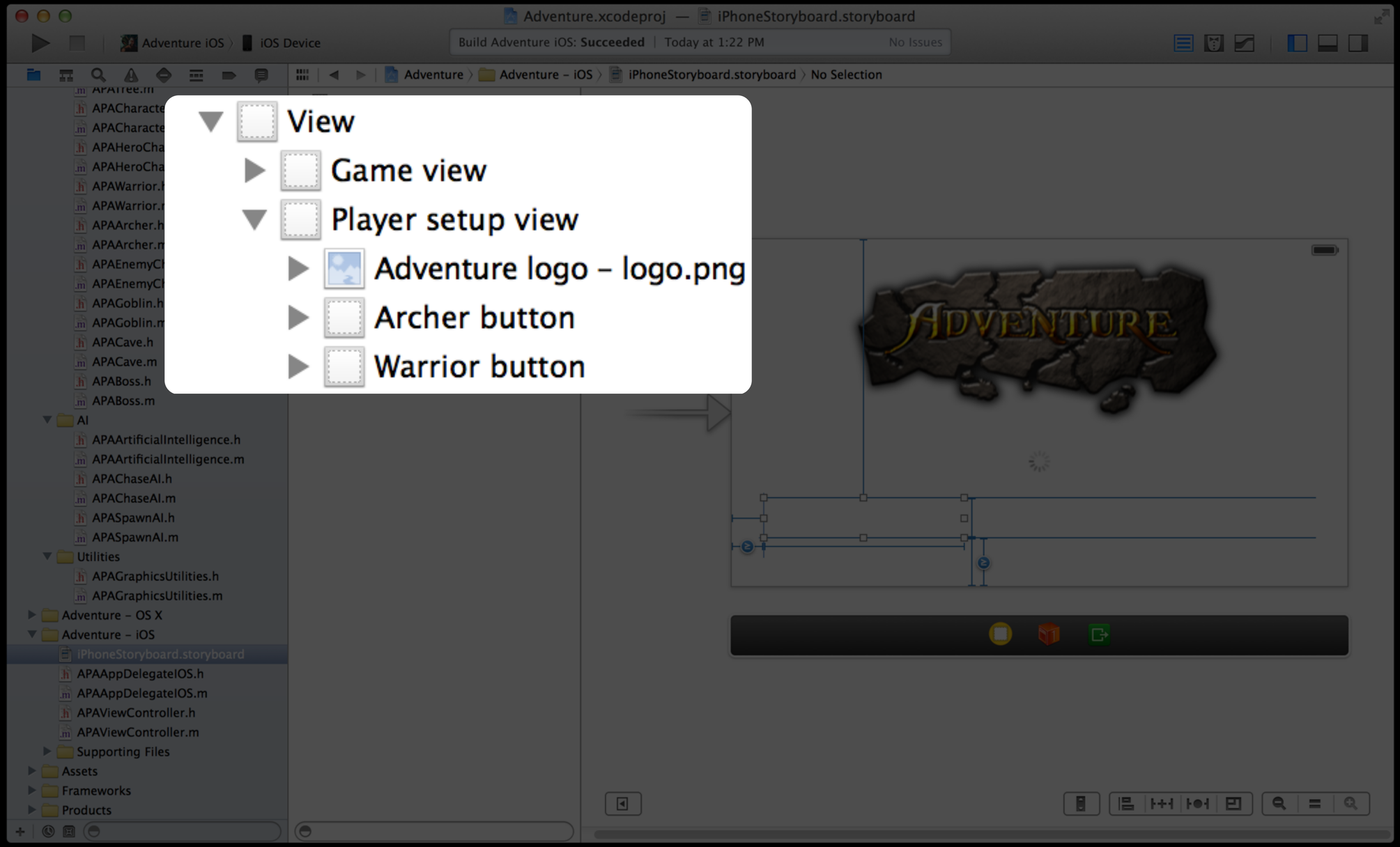
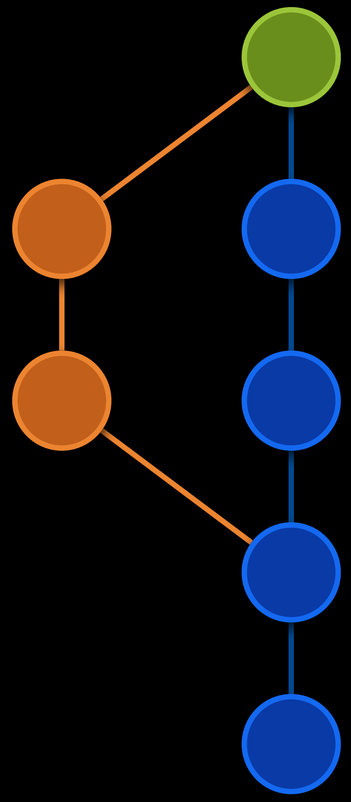

Adventure.xcodeproj — iPhoneStoryboard.storyboard
Adventure iOS
iOS Device
Build Adventure iOS: Succeeded | Today at 1:22 PM
No Issues
Adventure
Adventure – iOS
iPhoneStoryboard.storyboard
No Selection
View
Game view
Player setup view
Adventure logo – logo.png
Archer button
Warrior button
ADVENTURE
AI
Utilities
Adventure – OS X
Adventure – iOS
Supporting Files
Assets
Frameworks
Products

Method Completion

Edit in Scope

Debug Quick Looks

Rename IB Objects



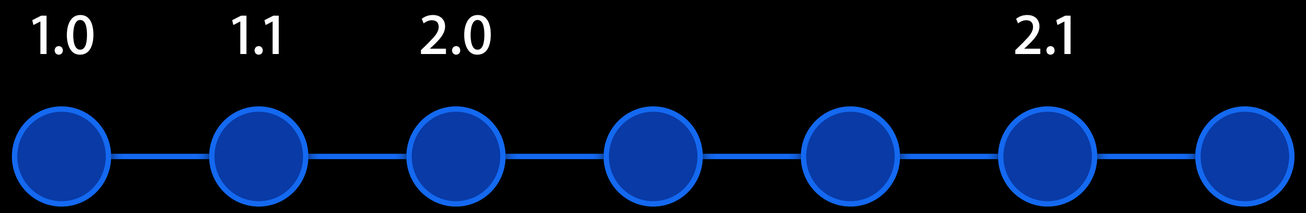
Method Completion

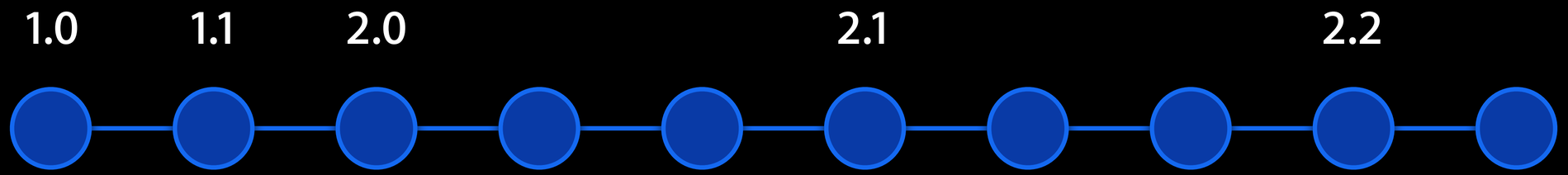
Edit in Scope

Debug Quick Looks

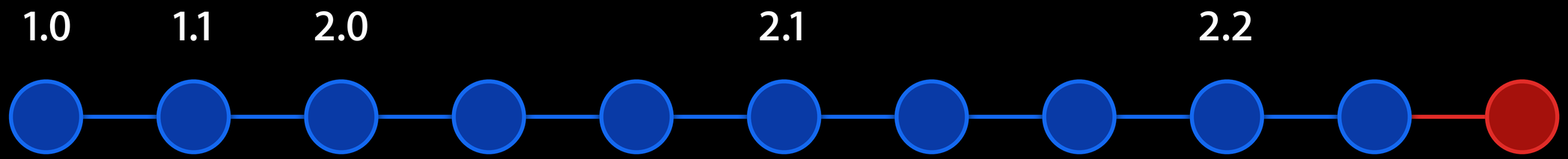
Rename IB Objects

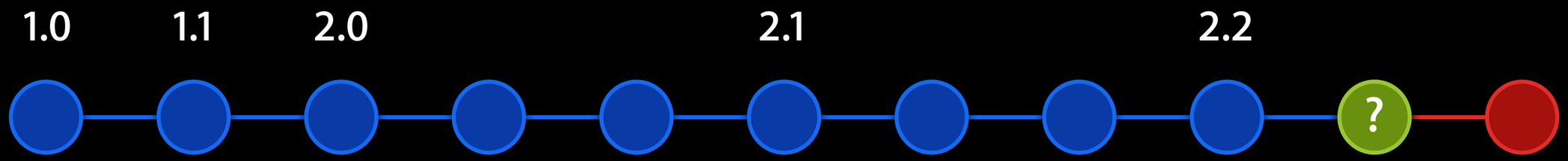
Source Control

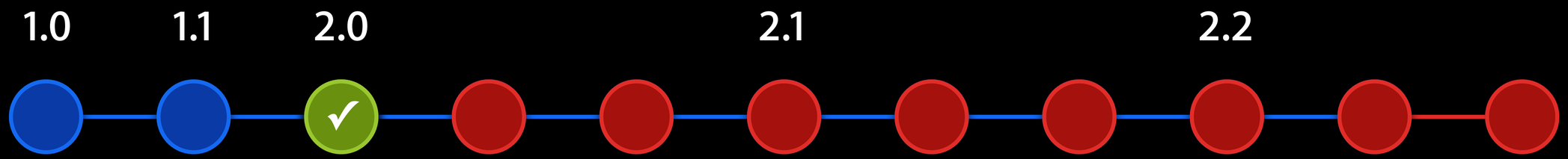

1.0
1.1
2.0
2.1


1.0
1.1
2.0
2.1
2.2

Oh no!
Something broke!!!


1.0
1.1
2.0
2.1
2.2


1.0
1.1
2.0
2.1
2.2
?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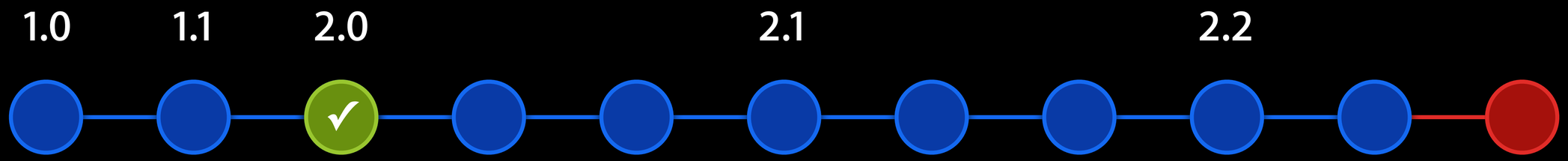
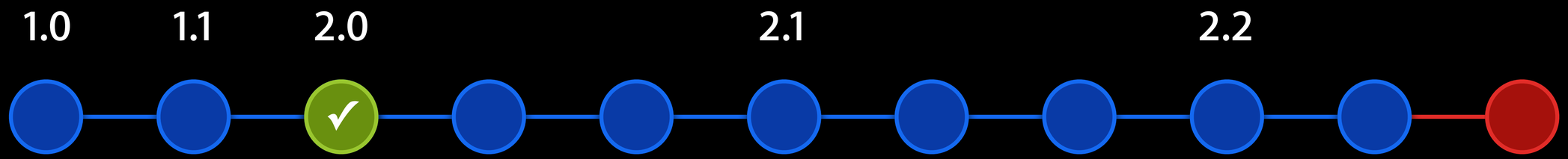
1.1
2.0
2.1
2.2


1.0
1.1
2.0
2.1
2.2



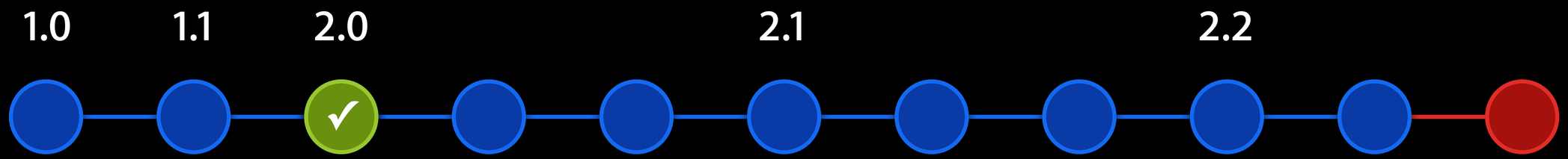
git bisect

Source Control

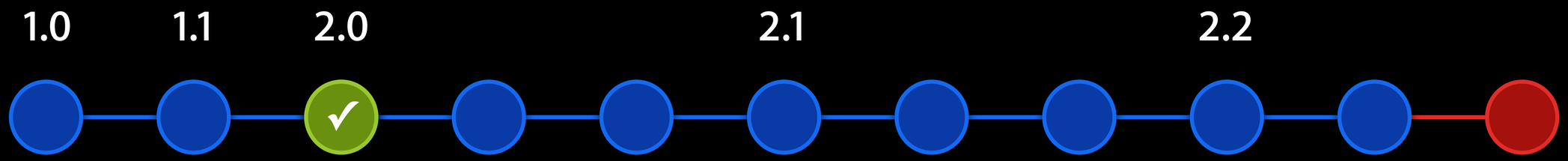
git bisect

- Binary search through revision history
- You may not need it often
- Saves a ton of time!

git bisect

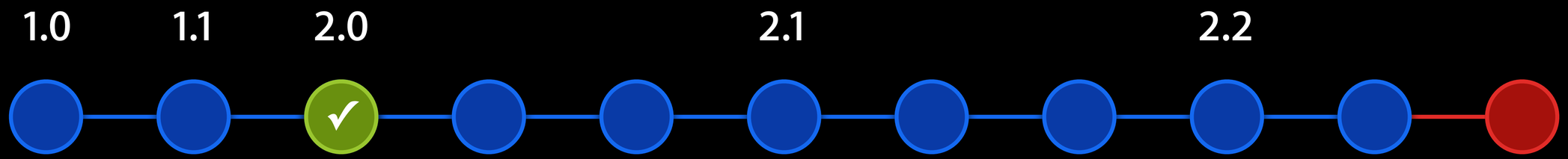


git bisect

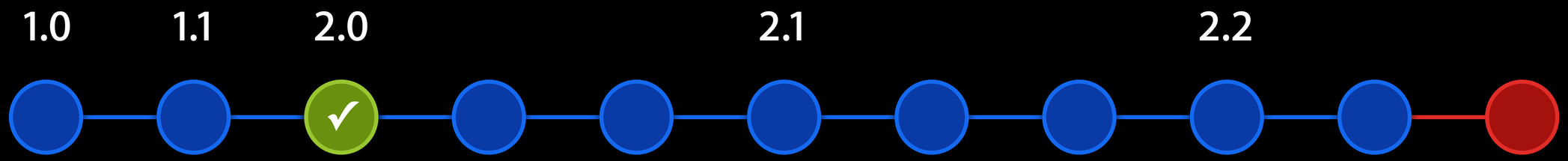



```
git bisect start
```

git bisect

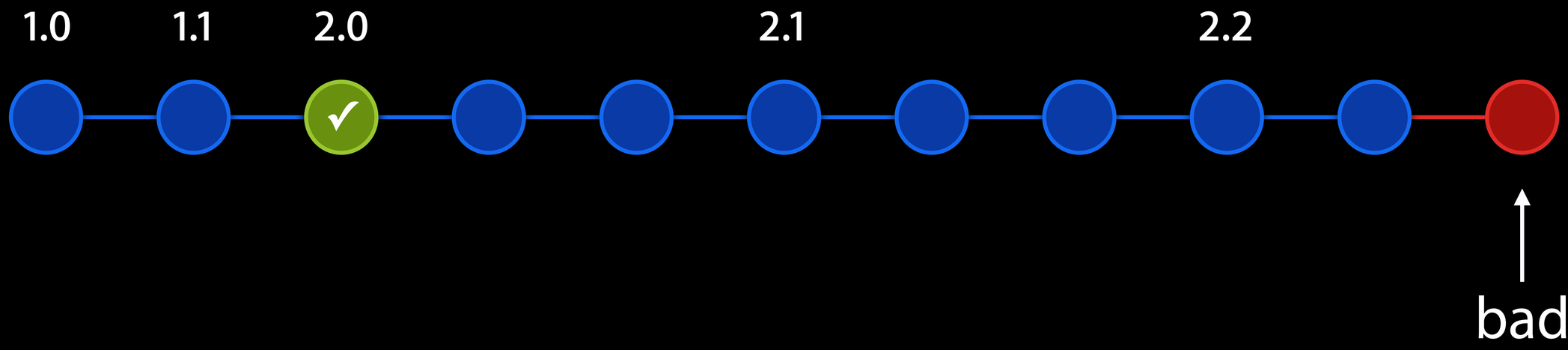


git bisect



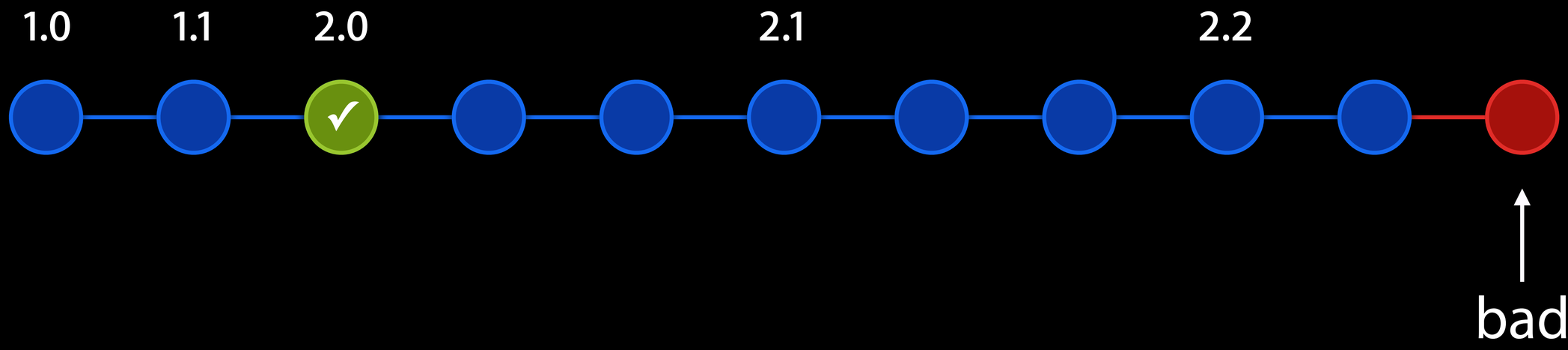

```
git bisect bad
```

git bisect

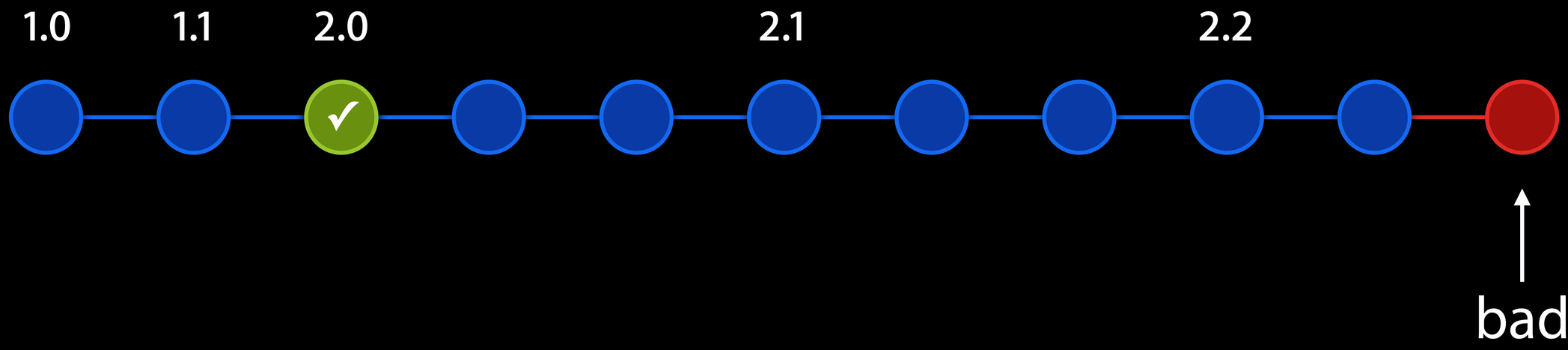



```
git bisect bad
```

git bisect

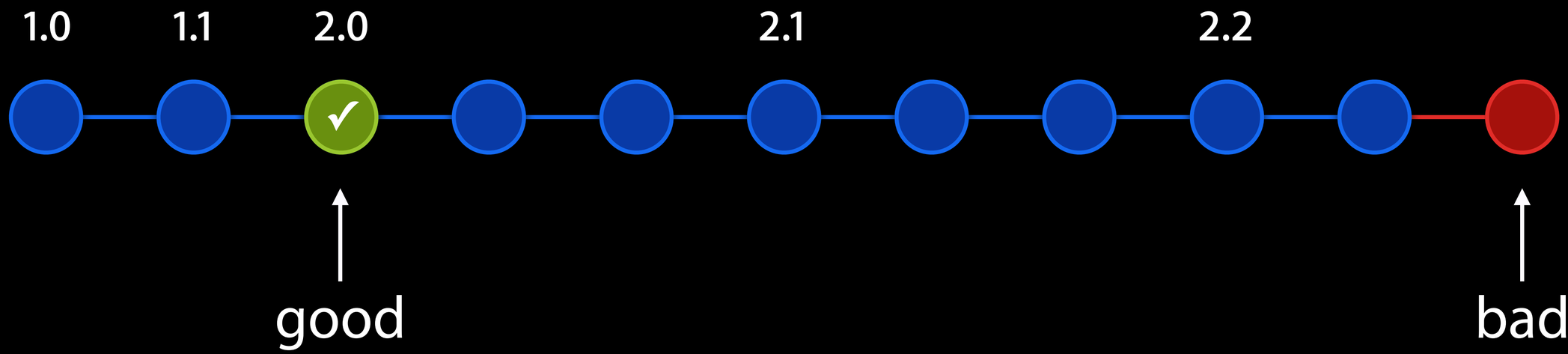


git bisect



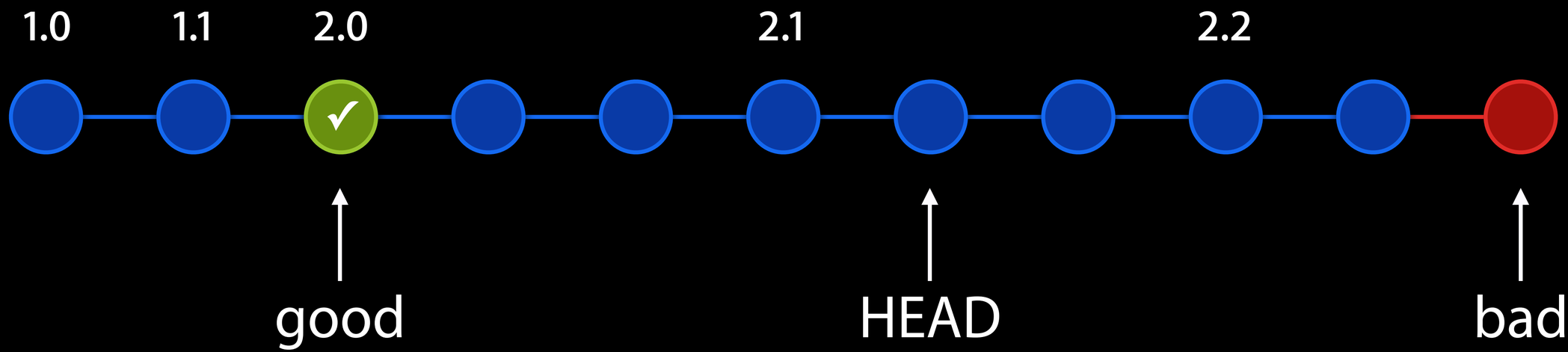

```
git bisect good 2.0
```

git bisect



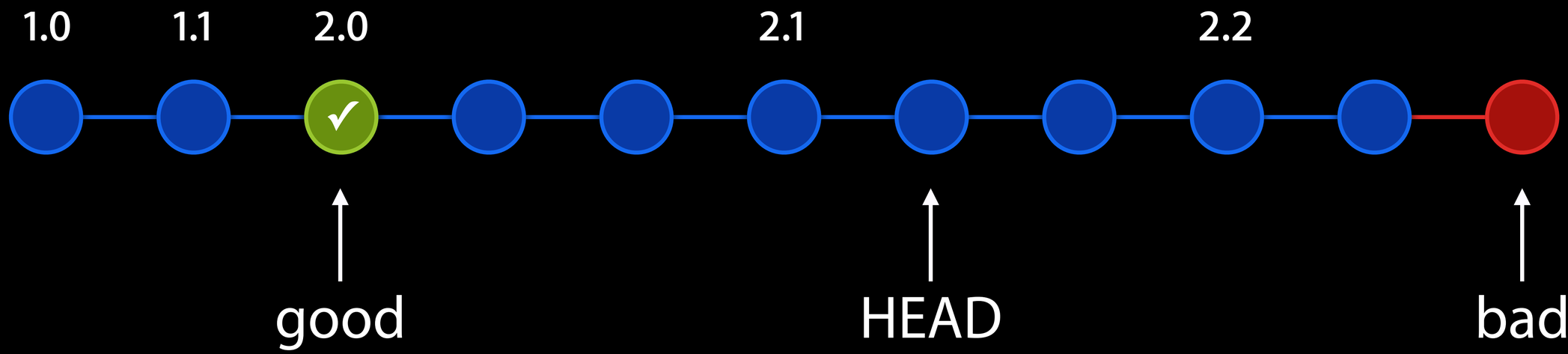

```
git bisect good 2.0
```

git bisect



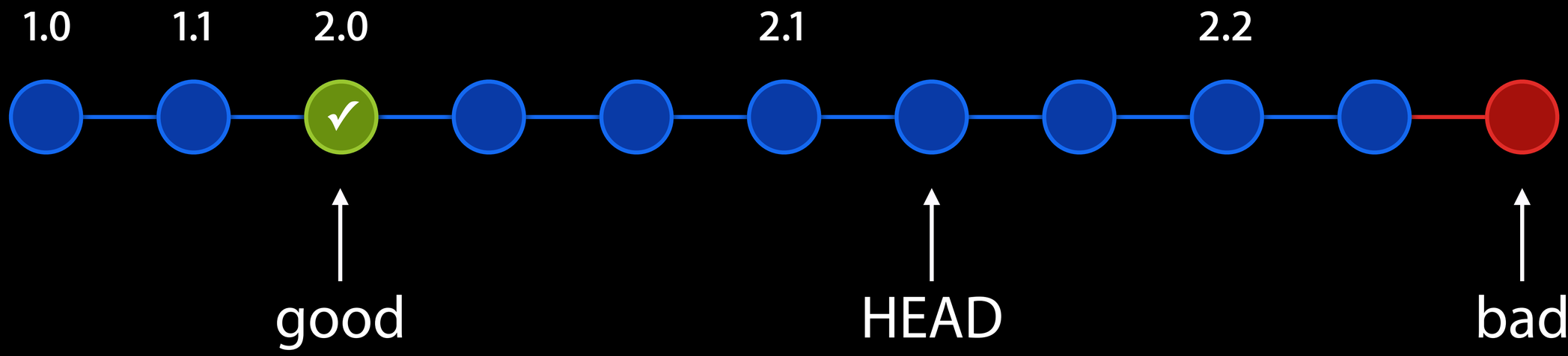

```
git bisect good 2.0
```

git bisect

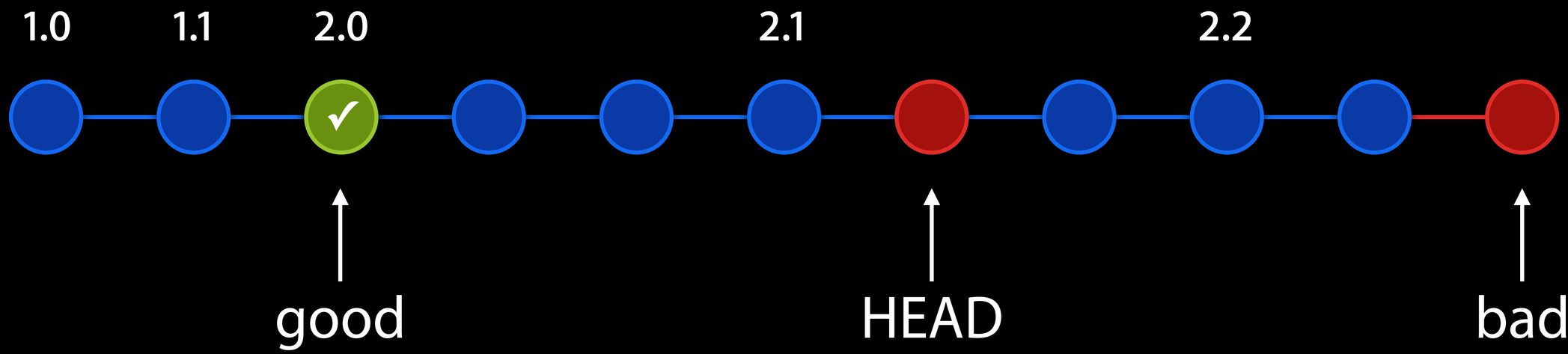


Run your tests...

git bisect

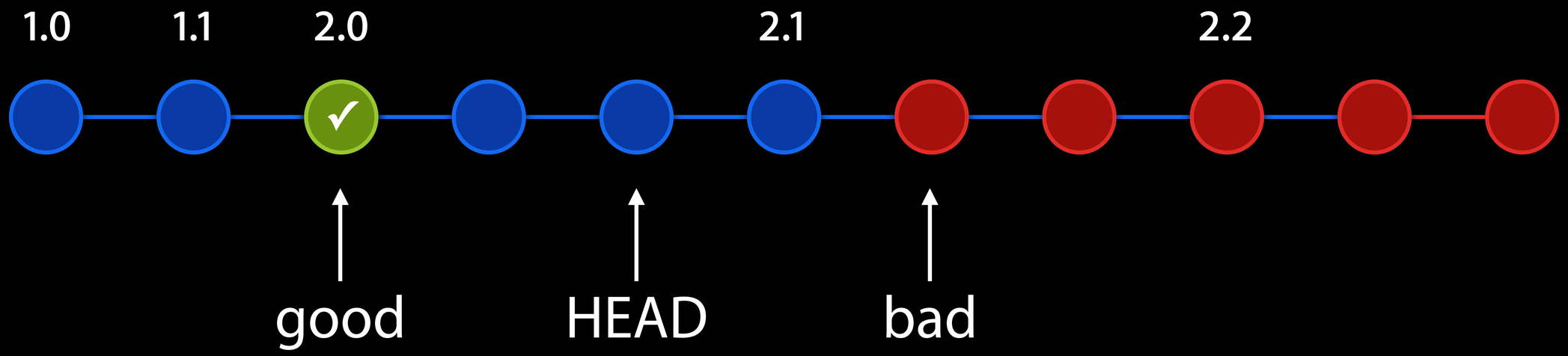


git bisect



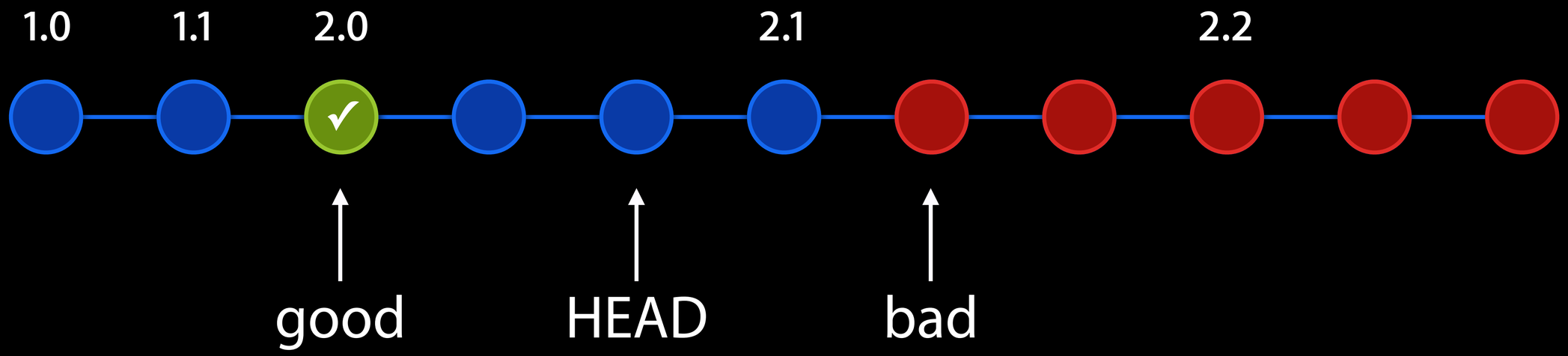

```
git bisect bad
```

git bisect



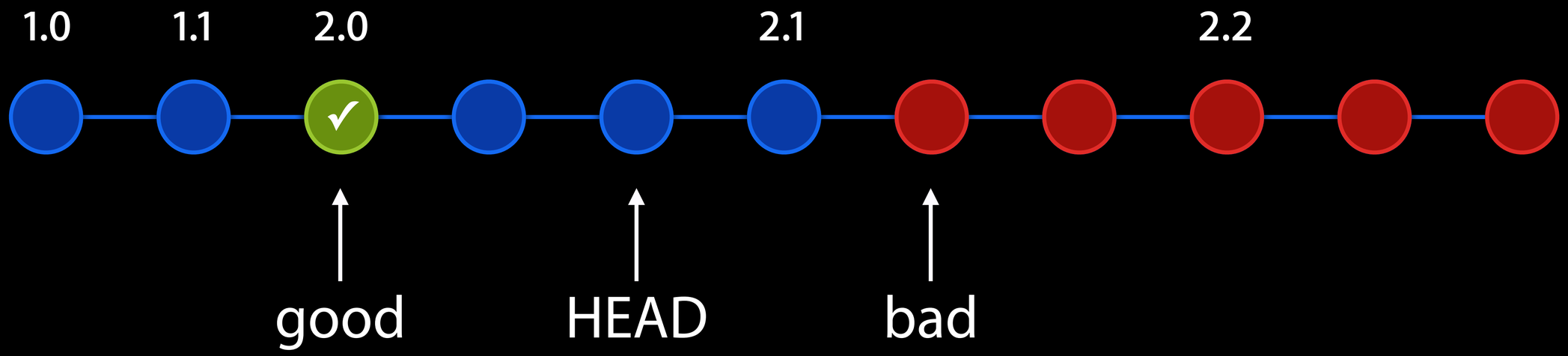

```
git bisect bad
```

git bisect

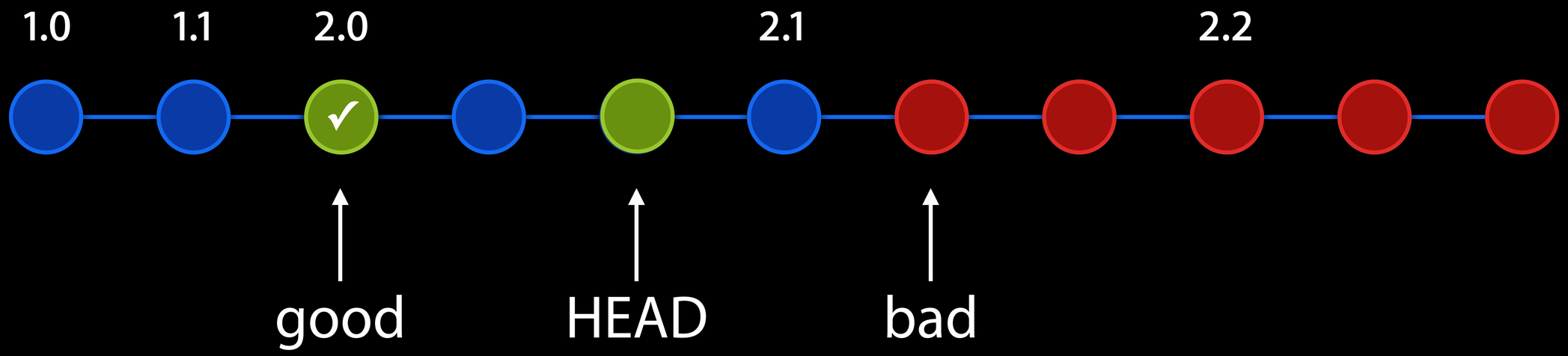


Run your tests...

git bisect

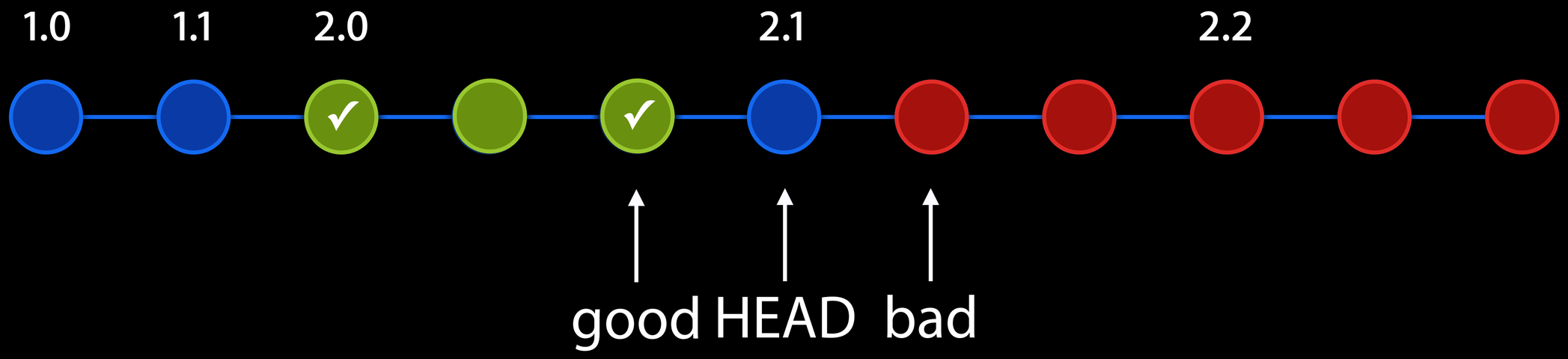


git bisect



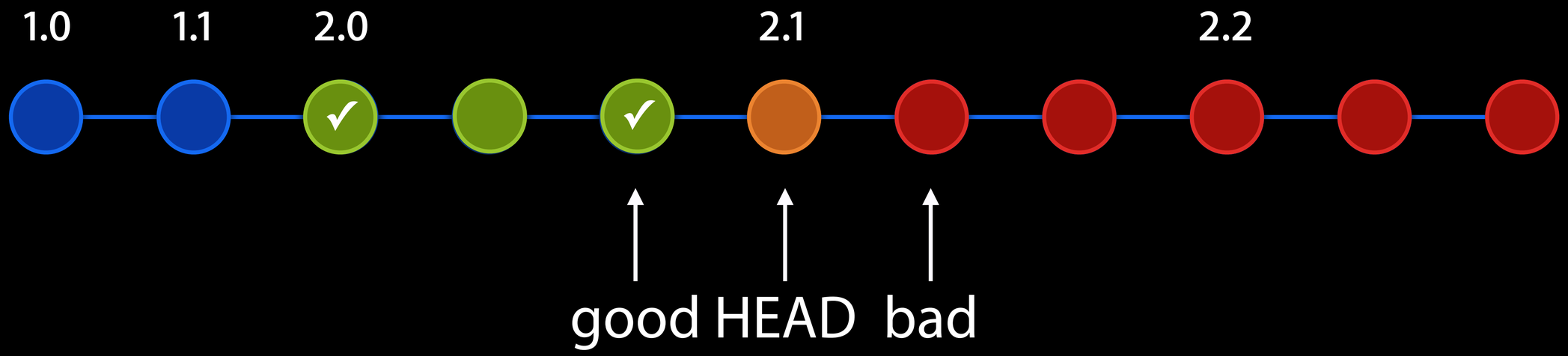

```
git bisect good
```

git bisect

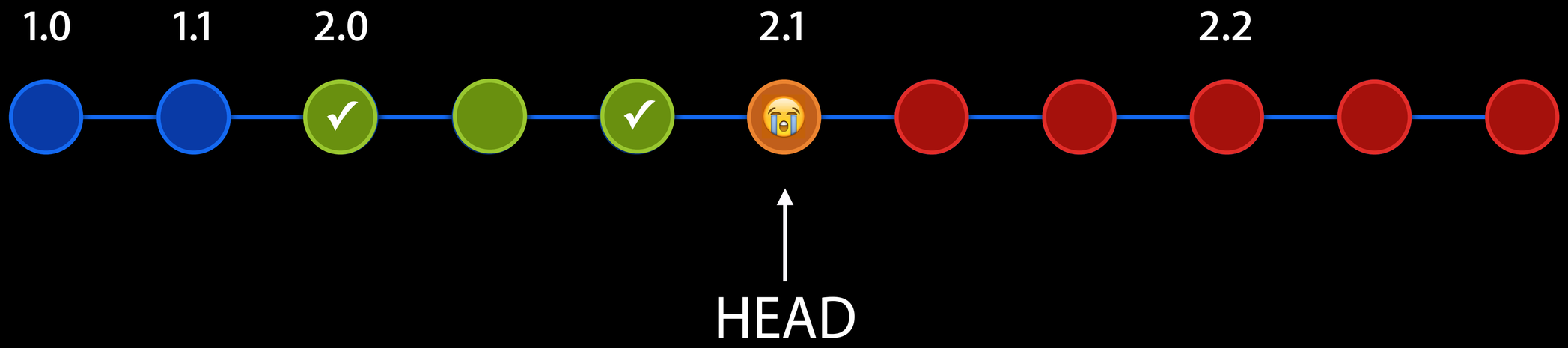



```
git bisect good
```

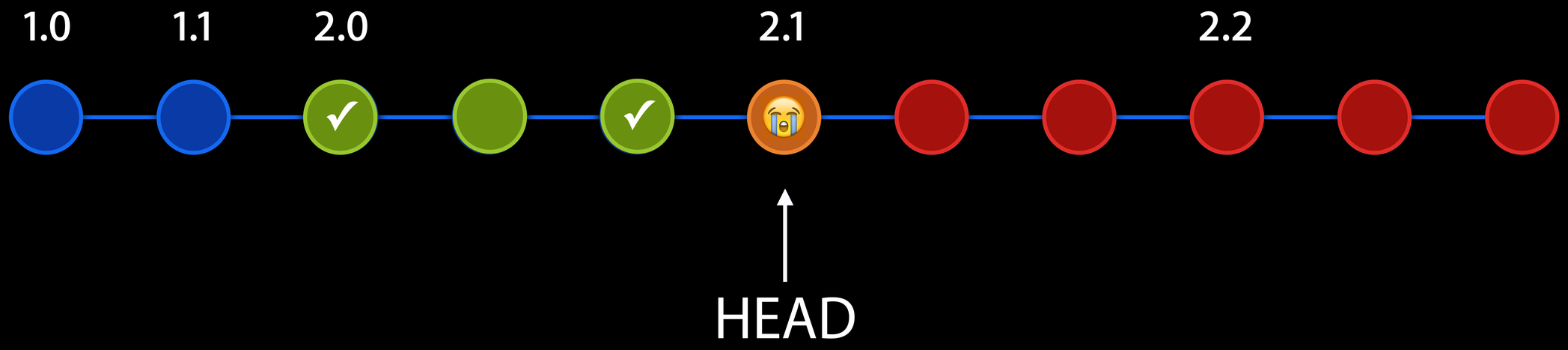
git bisect



git bisect



git bisect



`git blame`

Method Completion

Edit in Scope

Debug Quick Looks

Rename IB Objects

git bisect

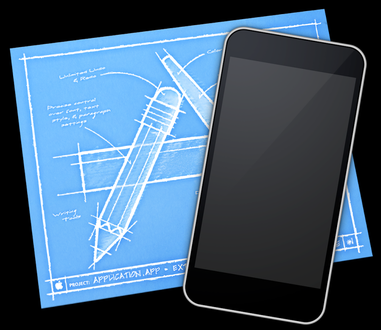
Method Completion

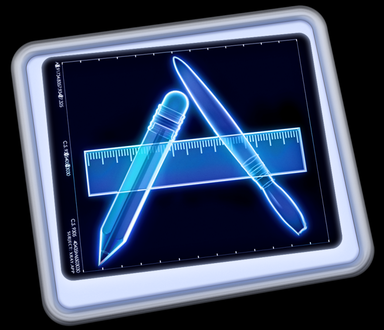
Edit in Scope

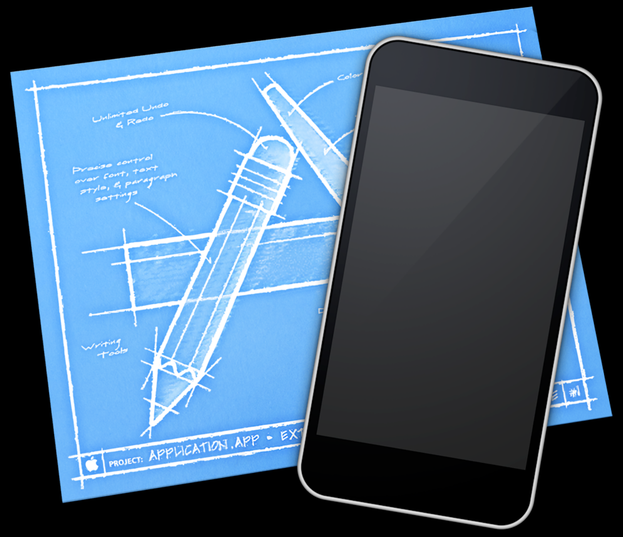
Debug Quick Looks

Rename IB Objects

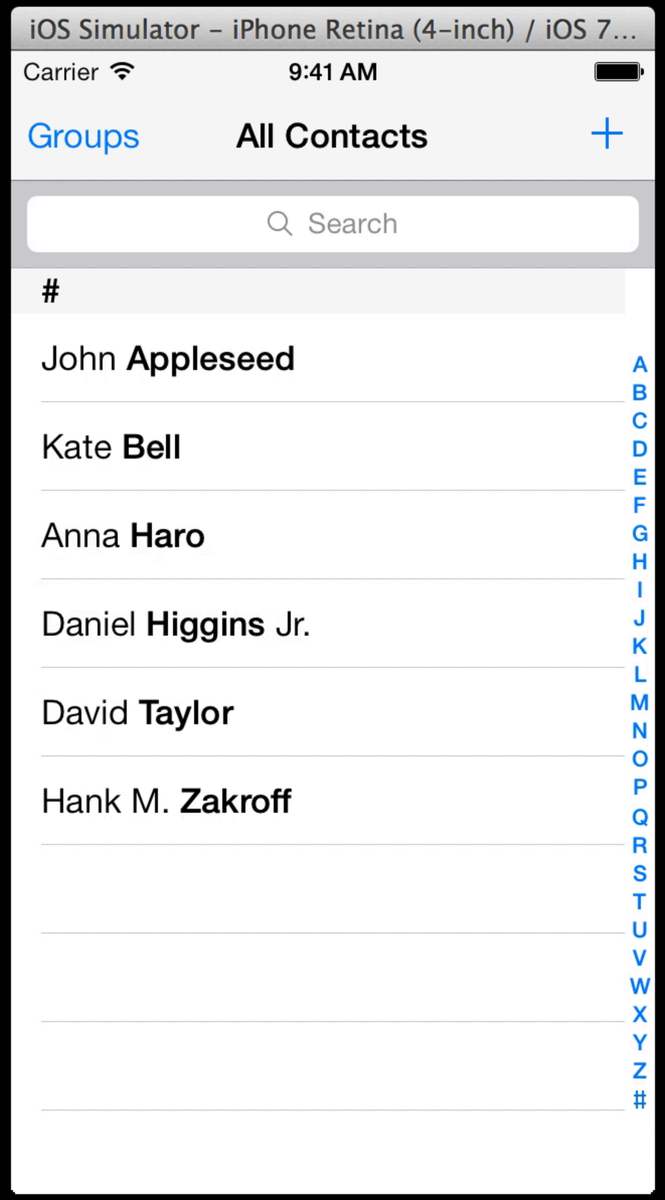
git bisect







Double High Status Bar


iOS Simulator - iPhone Retina (4-inch) / iOS 7...
Carrier
9:41 AM
Groups
All Contacts
Search
#
John Appleseed
Kate Bell
Anna Haro
Daniel Higgins Jr.
David Taylor
Hank M. Zakroff
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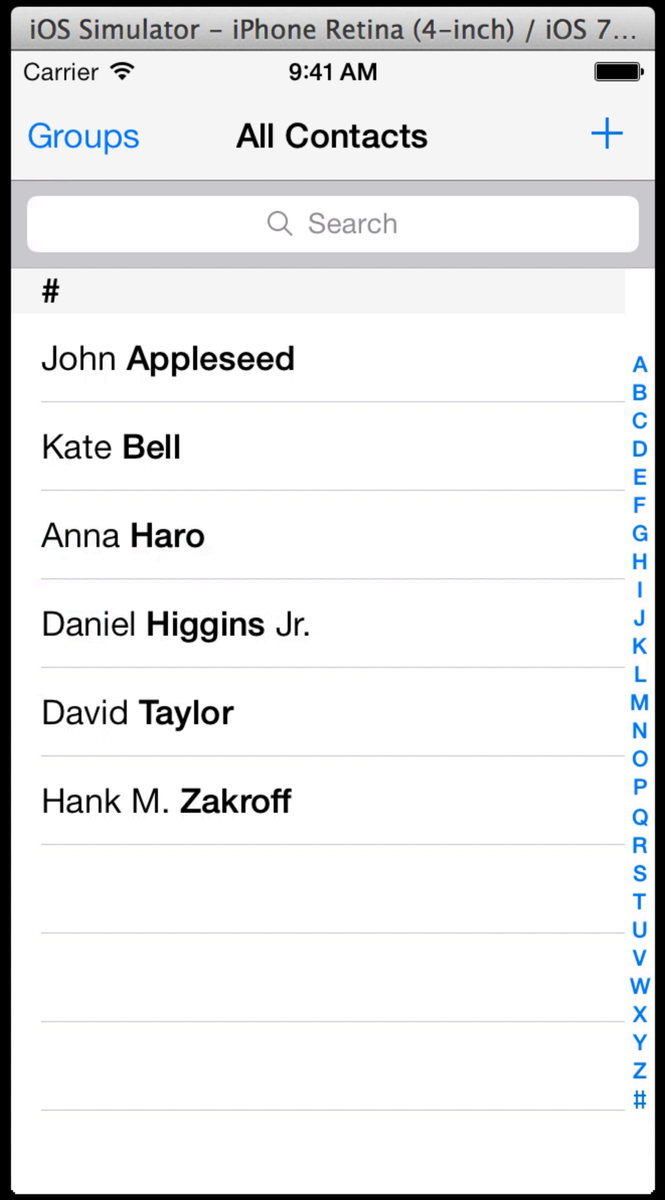
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All Contacts
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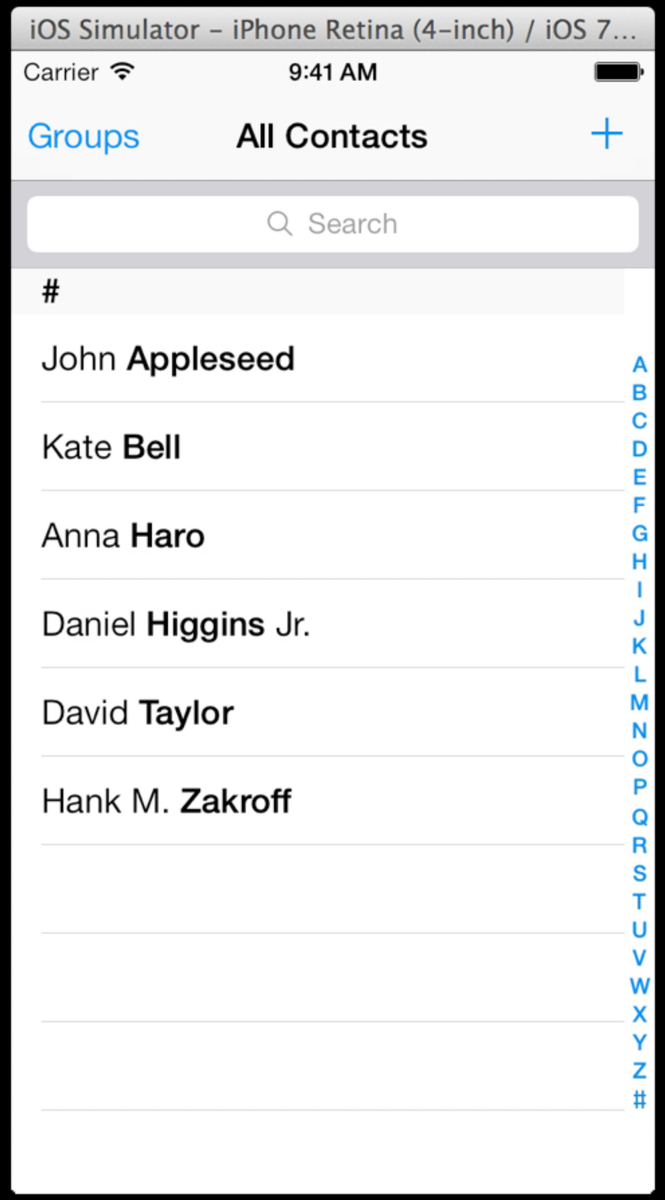
iOS Simulator - iPhone Retina (4-inch) / iOS 7...
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All Contacts
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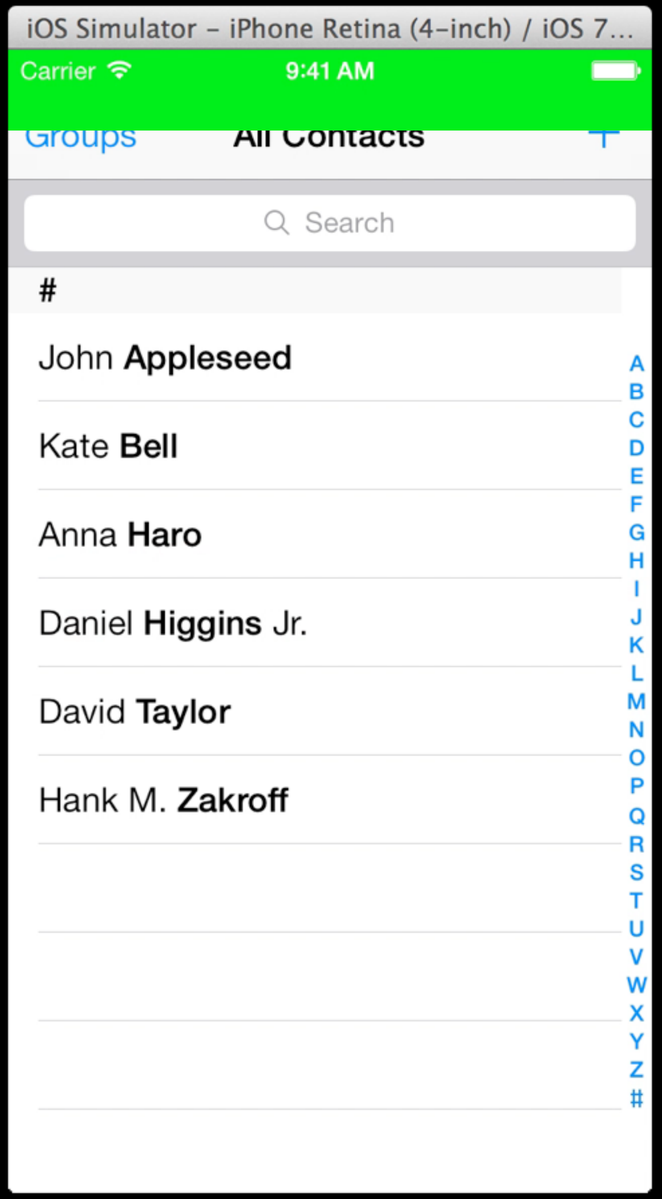
iOS Simulator - iPhone Retina (4-inch) / iOS 7...
Carrier
9:41 AM
Groups
All Contacts
Search
#
John Appleseed
Kate Bell
Anna Haro
Daniel Higgins Jr.
David Taylor
Hank M. Zakroff
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#

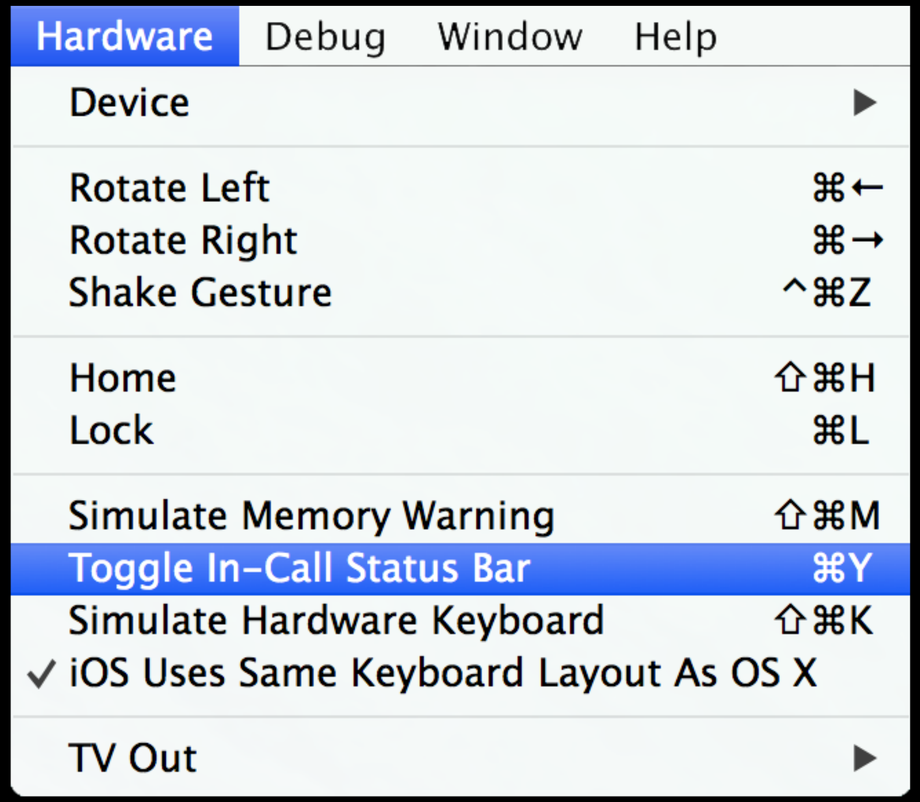
Simulator

Double high status bar

Simulator

Double high status bar

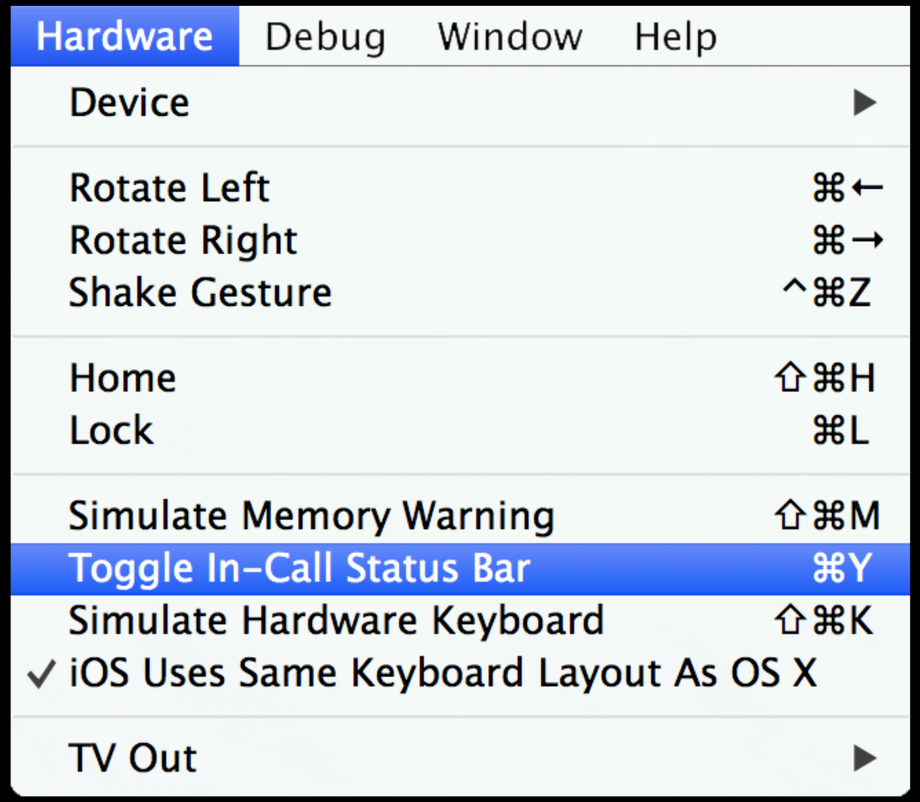
- Toggle easily in simulator



Simulator

Double high status bar

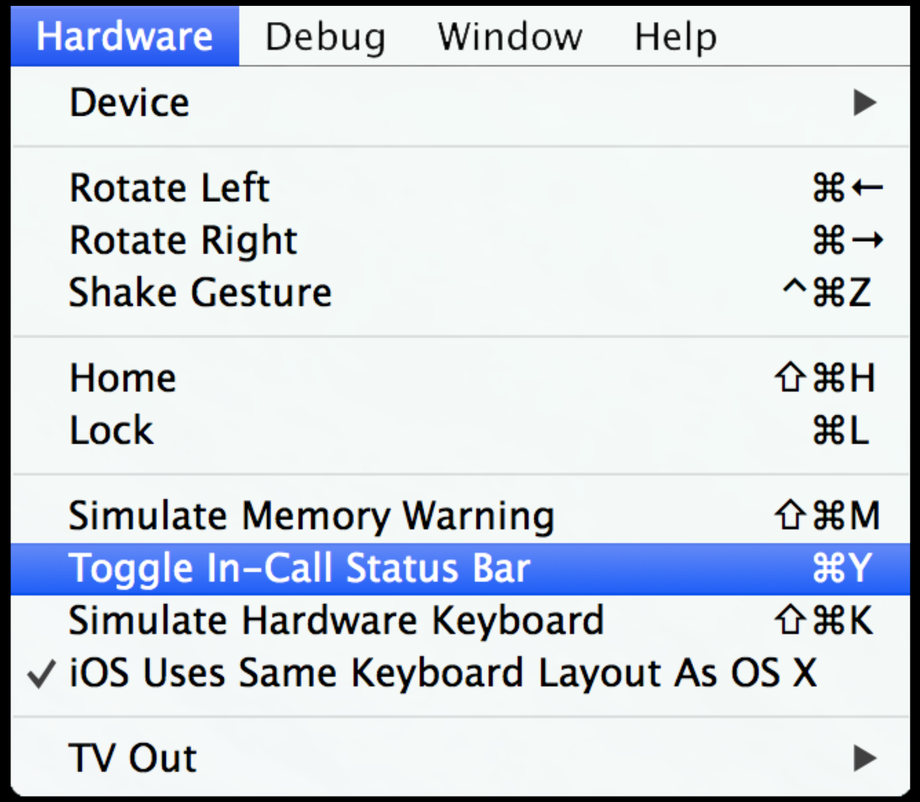
- Toggle easily in simulator
- Verify you update correctly



Simulator

Double high status bar

- Toggle easily in simulator
- Verify you update correctly
- Test in portrait and landscape



Simulator

Double high status bar

Simulator

Double high status bar

- Listen for notifications

```
UIApplicationWillChangeStatusBarFrameNotification
UIApplicationDidChangeStatusBarFrameNotification
```

Simulator

Double high status bar

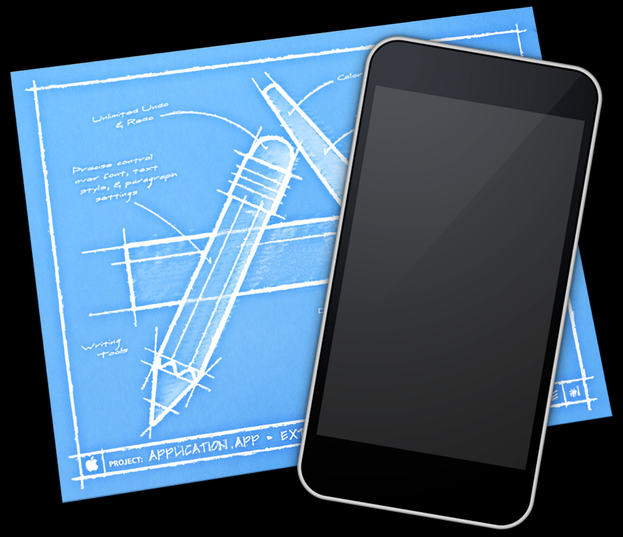
- Listen for notifications

```
UIApplicationWillChangeStatusBarFrameNotification
UIApplicationDidChangeStatusBarFrameNotification
```

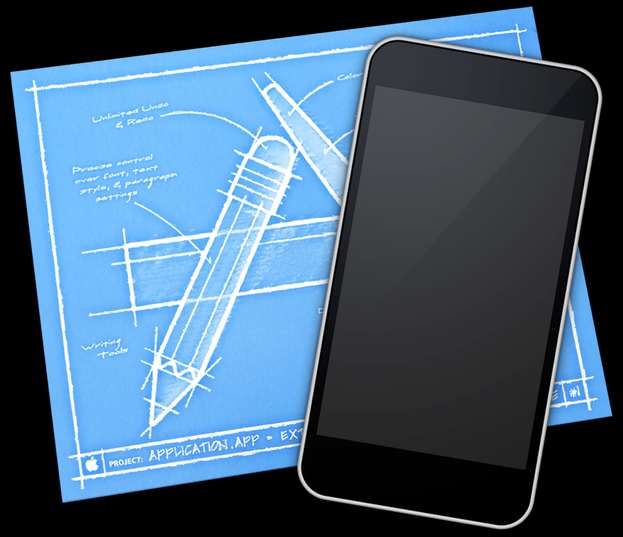
- UIApplicationDelegate callbacks

```
- (void)application:(UIApplication *)application
      willChangeStatusBarFrame:(CGRect)newStatusBarFrame;

- (void)application:(UIApplication *)application
      didChangeStatusBarFrame:(CGRect)oldStatusBarFrame;
```



Double High Status Bar

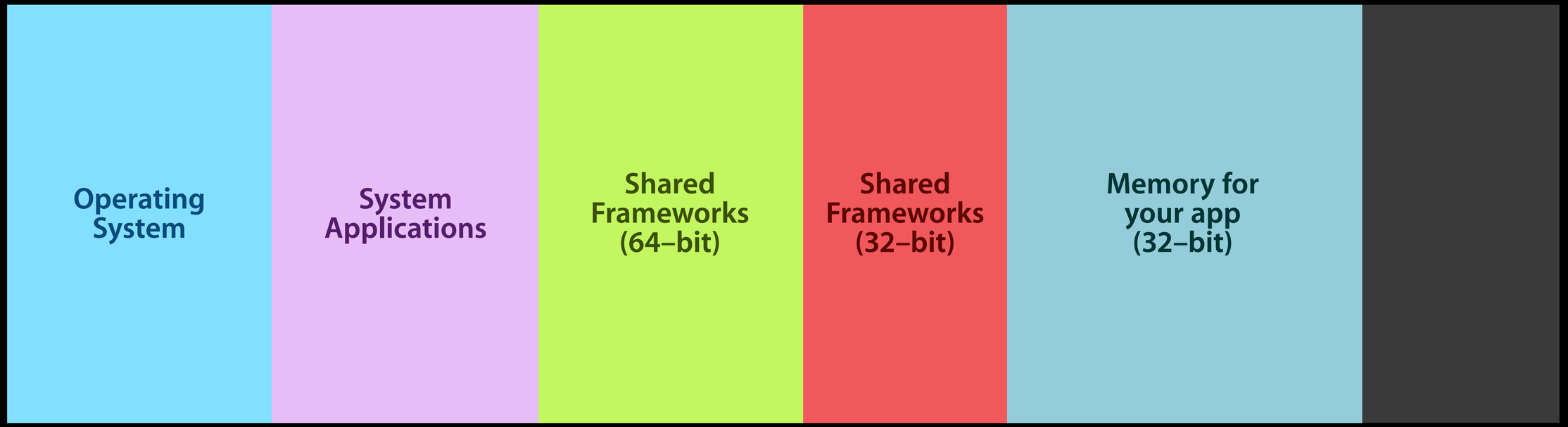


Double High Status Bar

Memory Warnings

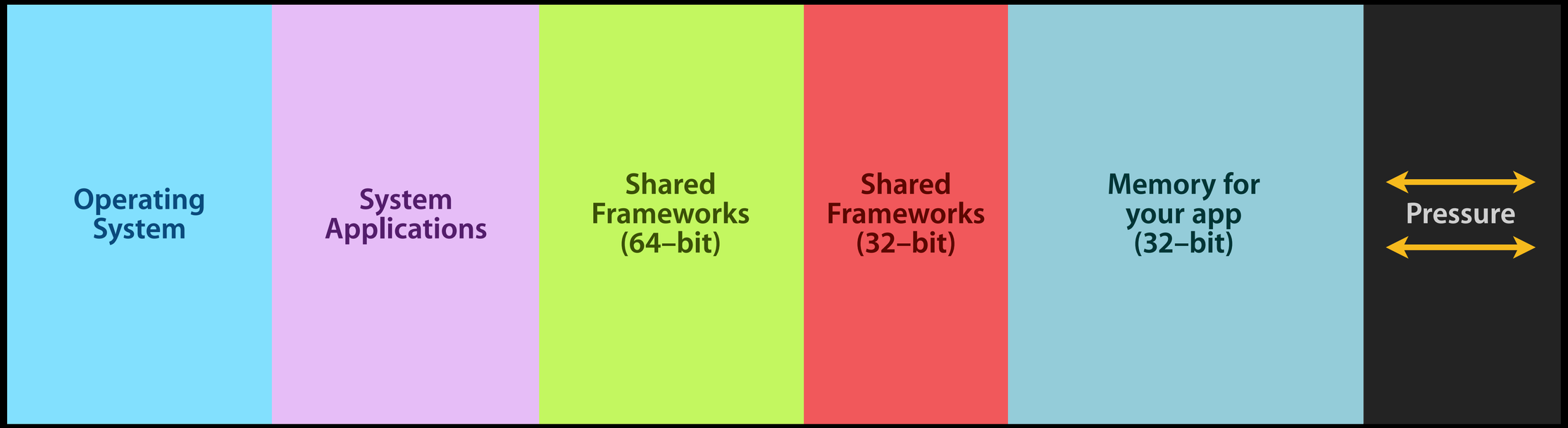
Simulator

Memory warnings



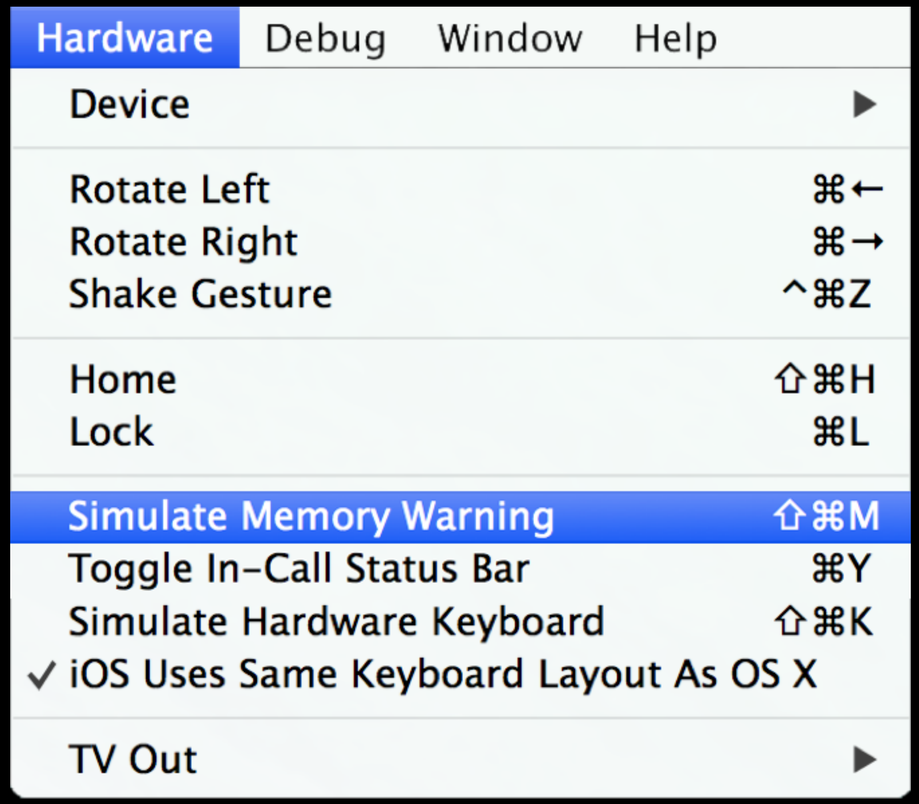
Simulator

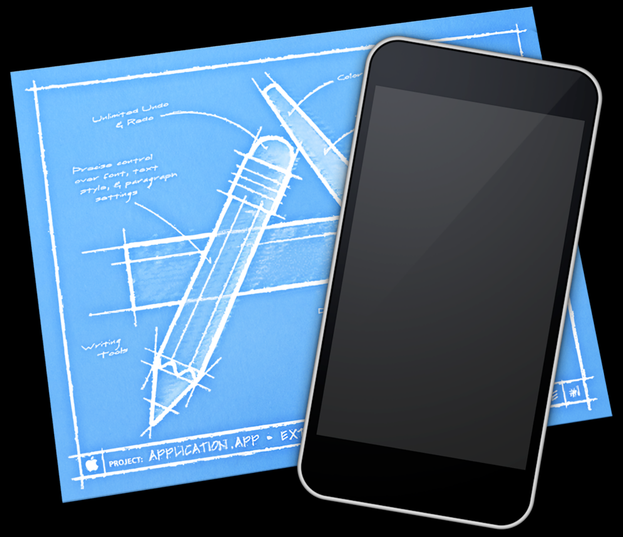
Memory warnings



Simulator

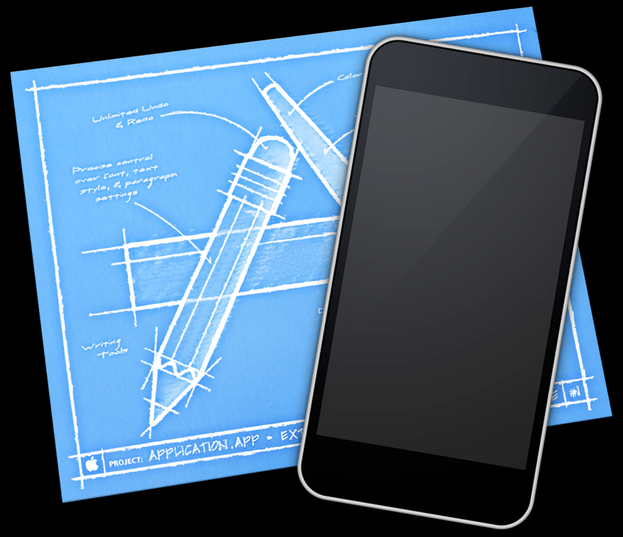
Memory warnings





Double High Status Bar

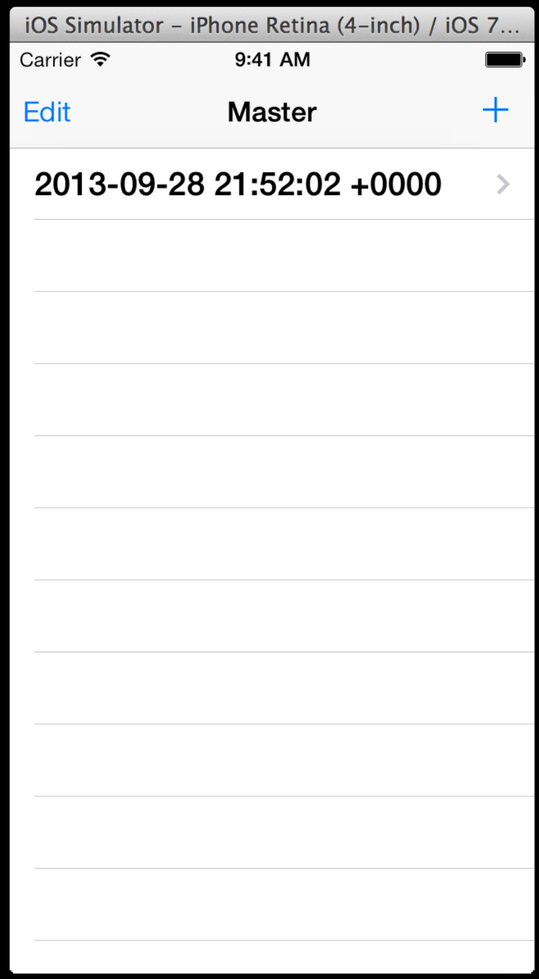
Memory Warnings

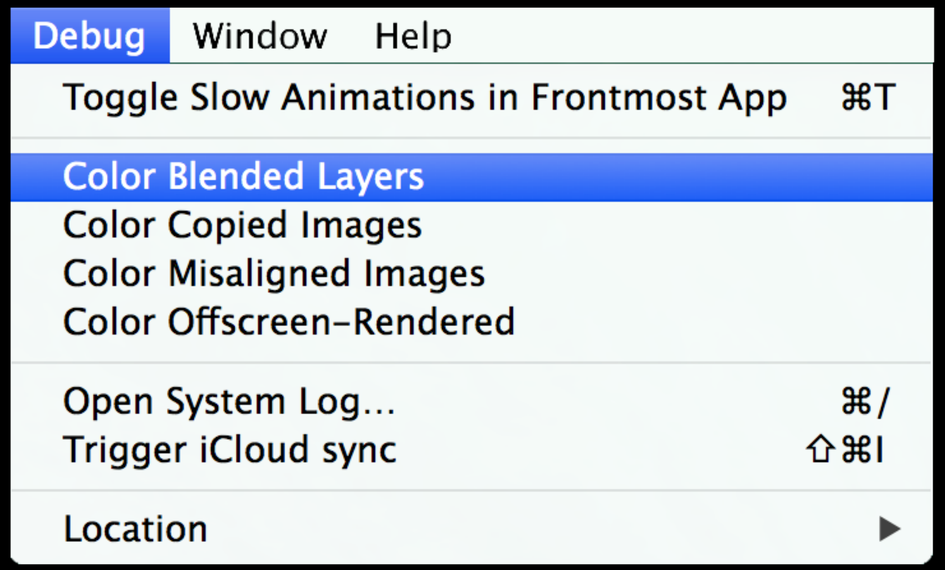


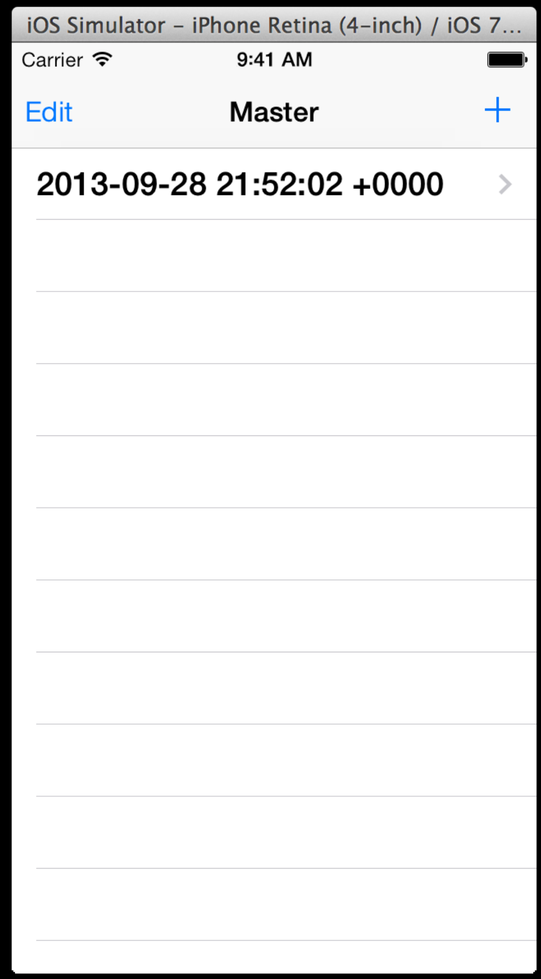
Double High Status Bar

Memory Warnings

Color Blended Layers


iOS Simulator - iPhone Retina (4-inch) / iOS 7...
Carrier
9:41 AM
Edit
Master
2013-09-28 21:52:02 +0000


Debug
Window
Help
Toggle Slow Animations in Frontmost App ⌘T
Color Blended Layers
Color Copied Images
Color Misaligned Images
Color Offscreen-Rendered
Open System Log… ⌘/
Trigger iCloud sync ⇧⌘I
Location


iOS Simulator – iPhone Retina (4-inch) / iOS 7…
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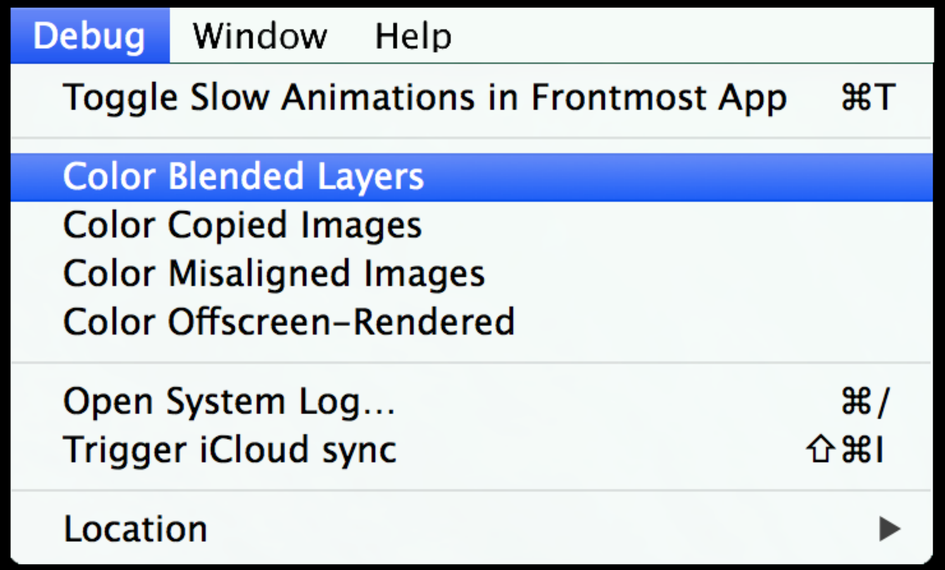
Master
2013-09-28 21:52:02 +0000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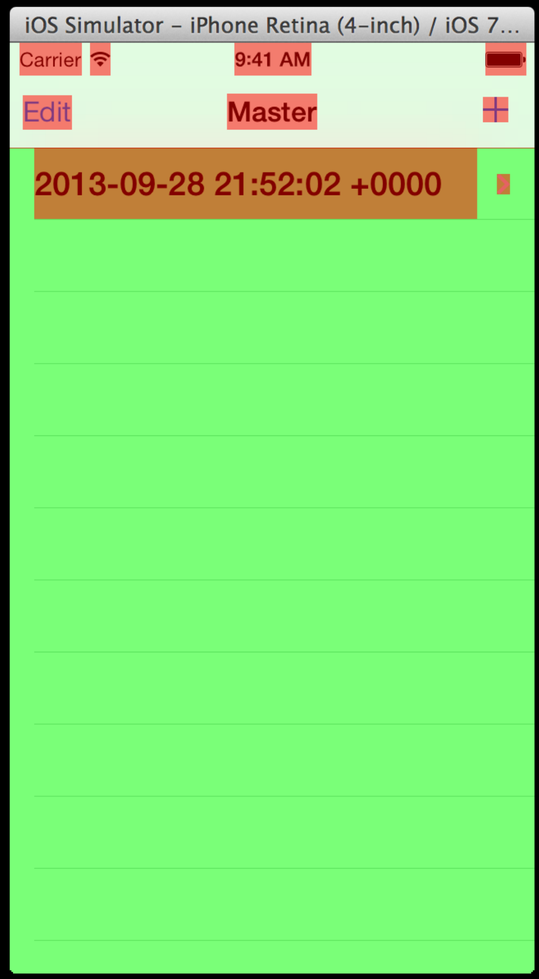
Location


iOS Simulator - iPhone Retina (4-inch) / iOS 7...
Carrier
9:41 AM
Edit
Master
2013-09-28 21:52:02 +0000

Simulator

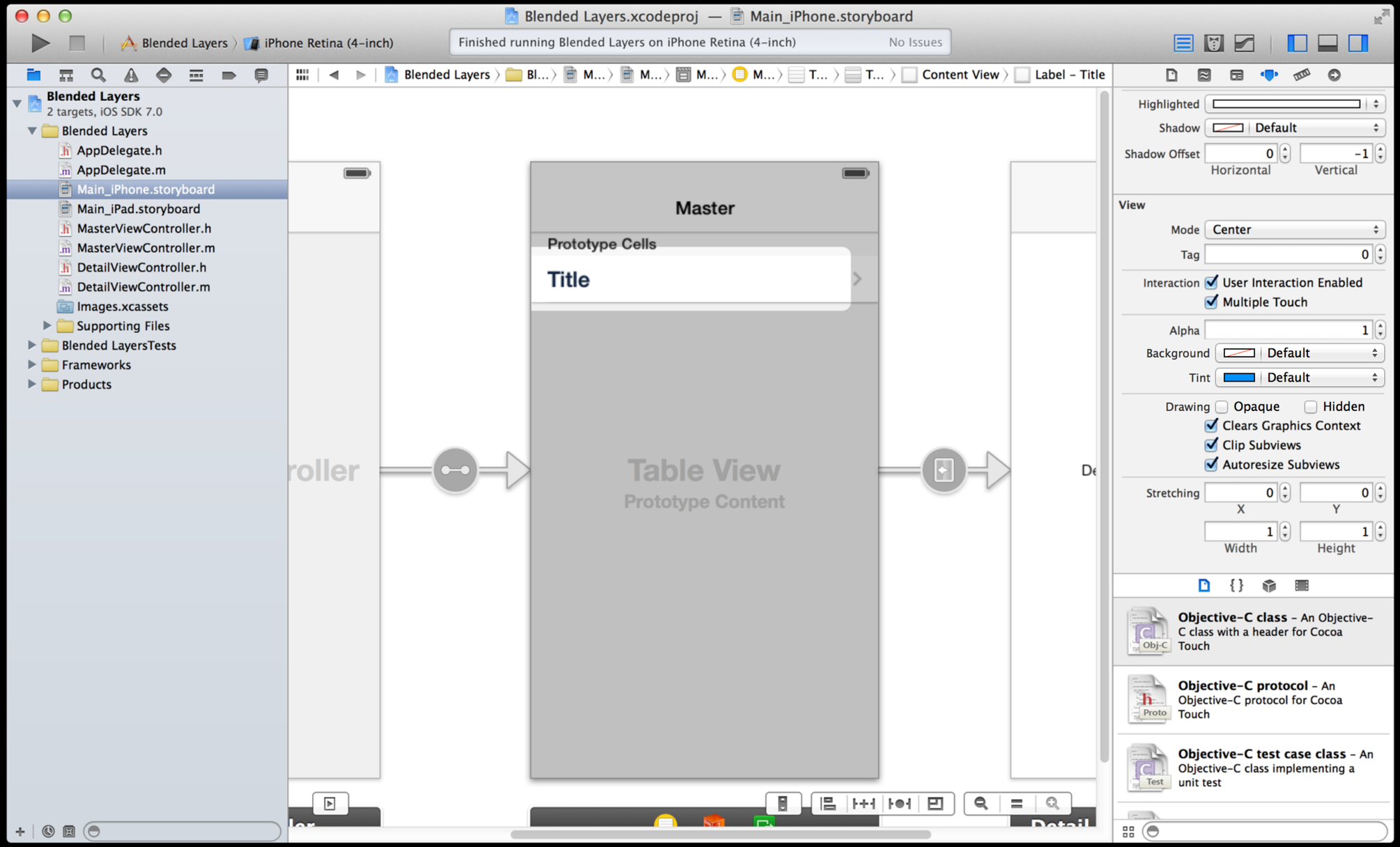
Color blended layers

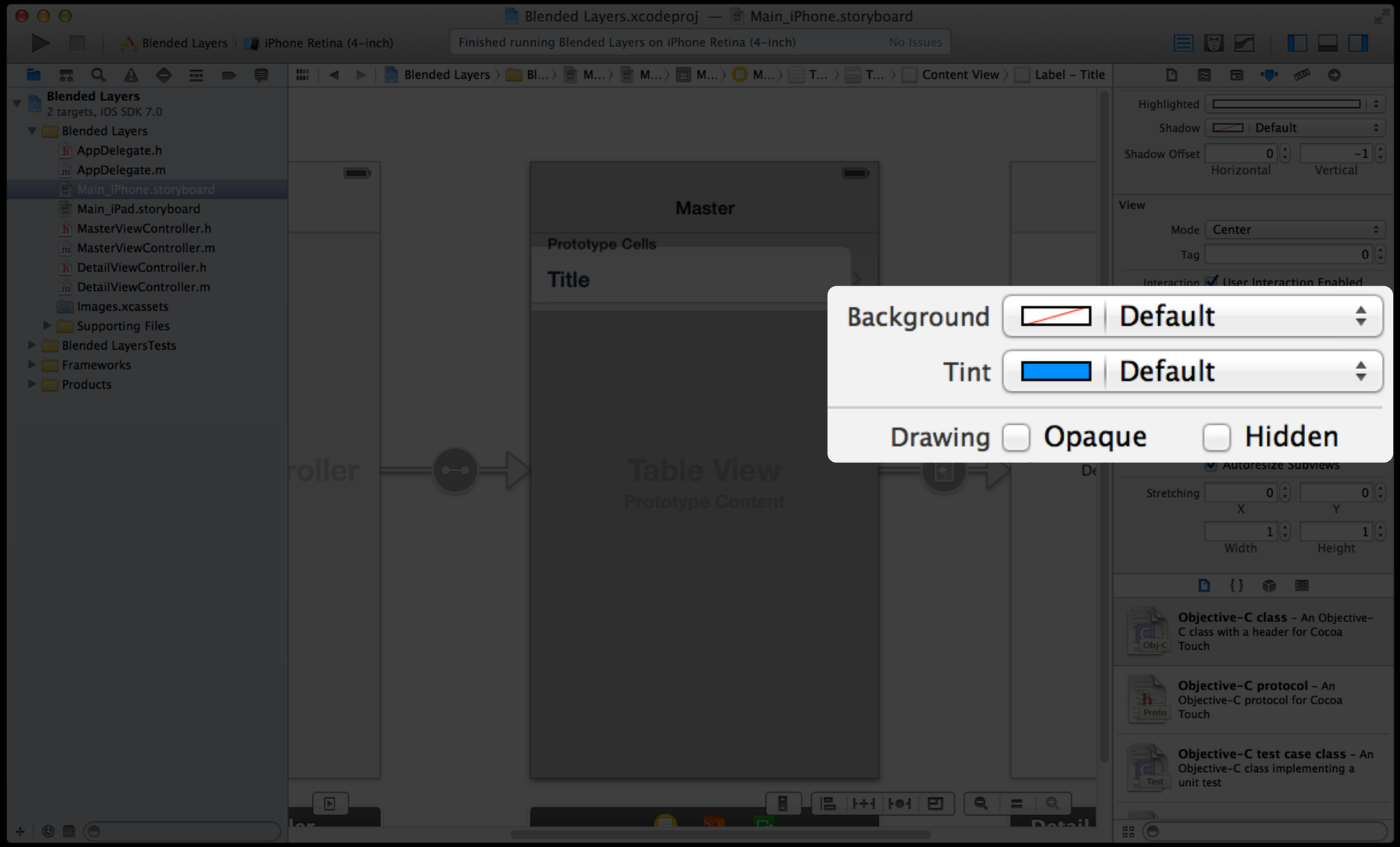
- Shows views that contain alpha
- Common performance issue for scrolling lists

Simulator

Color blended layers

- Shows views that contain alpha
- Common performance issue for scrolling lists


Blended Layers.xcodeproj — Main_iPhone.storyboard
Blended Layers 〉 iPhone Retina (4-inch)
Finished running Blended Layers on iPhone Retina (4-inch)
No Issues
Blended Layers
2 targets, iOS SDK 7.0
Blended Layers
AppDelegate.h
AppDelegate.m
Main_iPhone.storyboard
Main_iPad.storyboard
MasterViewController.h
MasterViewController.m
DetailViewController.h
DetailViewController.m
Images.xcassets
Supporting Files
Blended LayersTests
Frameworks
Products
Content View
Label – Title
Master
Prototype Cells
Title
Table View
Prototype Content
Highlighted
Shadow
Default
Shadow Offset
Horizontal
Vertical
View
Mode
Center
Tag
Interaction
User Interaction Enabled
Multiple Touch
Alpha
Background
Tint
Drawing
Opaque
Hidden
Clears Graphics Context
Clip Subviews
Autoresize Subviews
Stretching
X
Y
Width
Height
Objective-C class – An Objective-C class with a header for Cocoa Touch
Objective-C protocol – An Objective-C protocol for Cocoa Touch
Objective-C test case class – An Objective-C class implementing a unit test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Blended Layers
AppDelegate.h
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Main_iPhone.storyboard
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Content View 〉 Label – Title
Master
Prototype Cells
Title
Table View
Prototype Content
Highlighted
Shadow
Default
Shadow Offset
0
-1
Horizontal
Vertical
View
Mode
Center
Tag
0
User Interaction Enabled
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Default
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Default
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0
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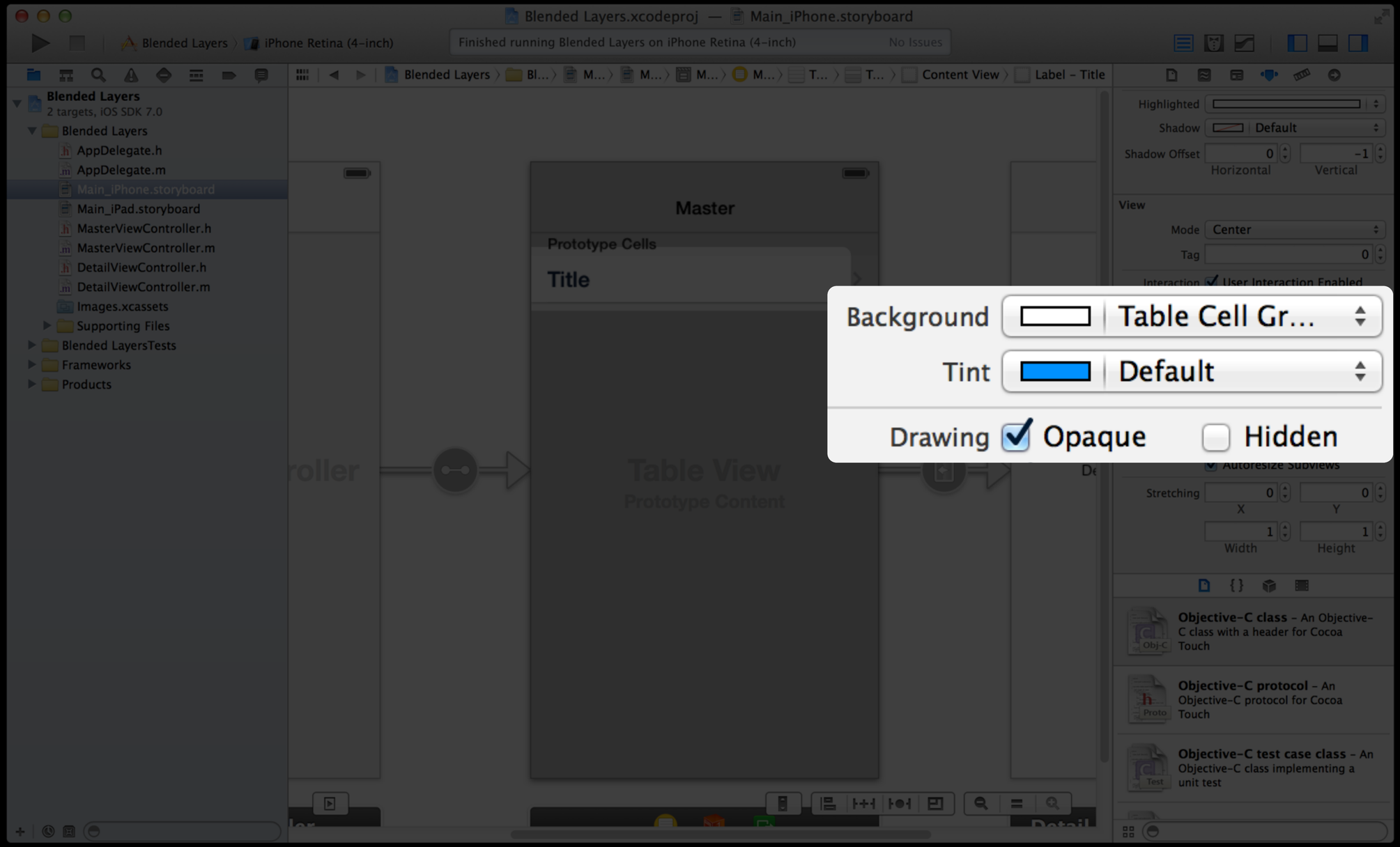
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Title
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Prototype Content
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0
-1
Horizontal
Vertical
View
Mode
Center
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Simulator

Debugging aids

Simulator

Debugging aids

Simulator

Debugging aids

Simulator

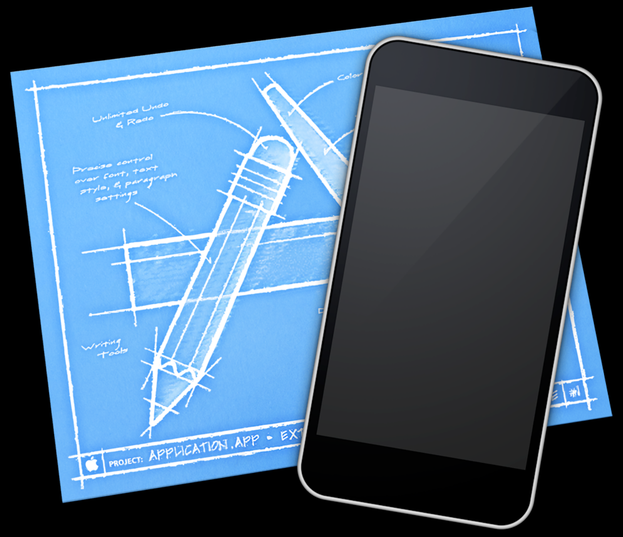
Debugging aids

- Common causes
  - Non-opaque views
  - Images with alpha
  - Using `–[UIColor clearColor]`

Simulator

Debugging aids

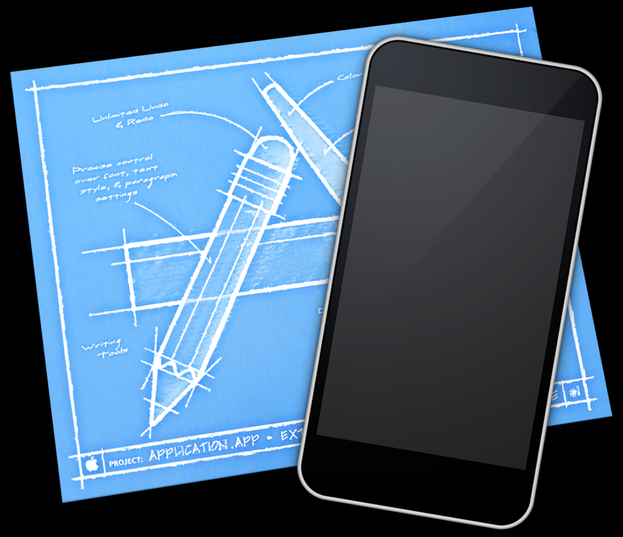
- Common causes
  - Non-opaque views
  - Images with alpha
  - Using `-[UIColor clearColor]`
- Usually easy to fix
  - Easy performance wins



Double High Status Bar

Memory Warnings

Color Blended Layers



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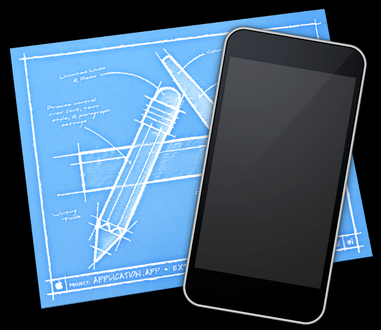
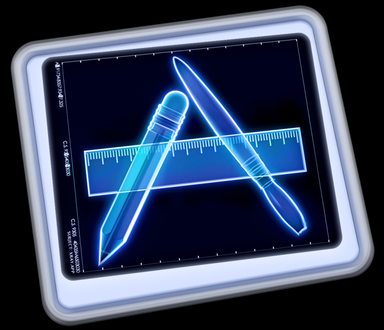
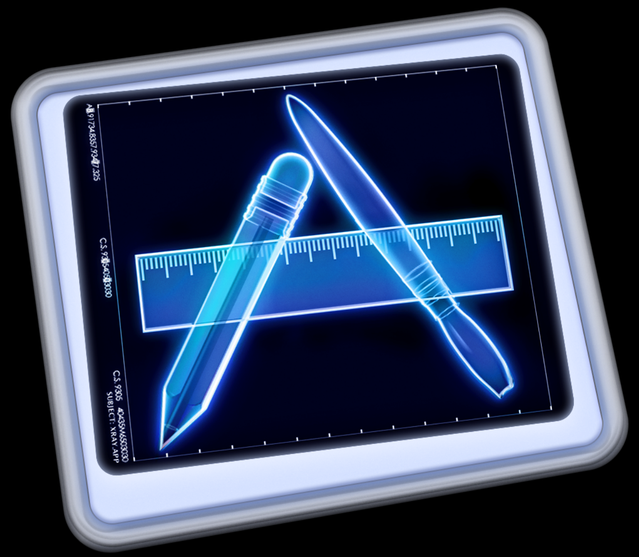
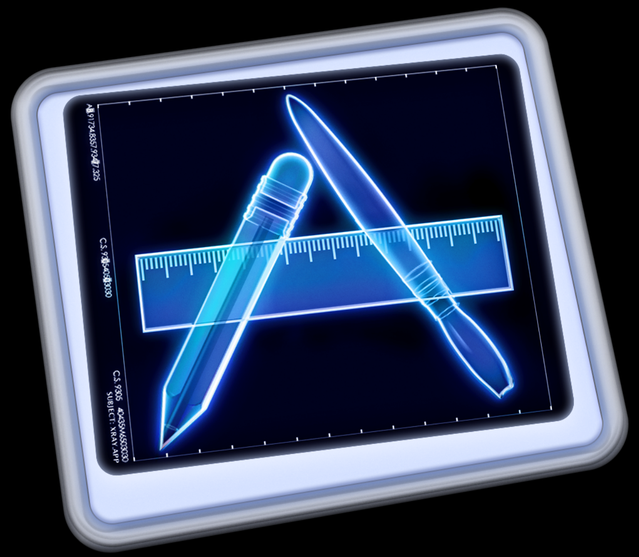




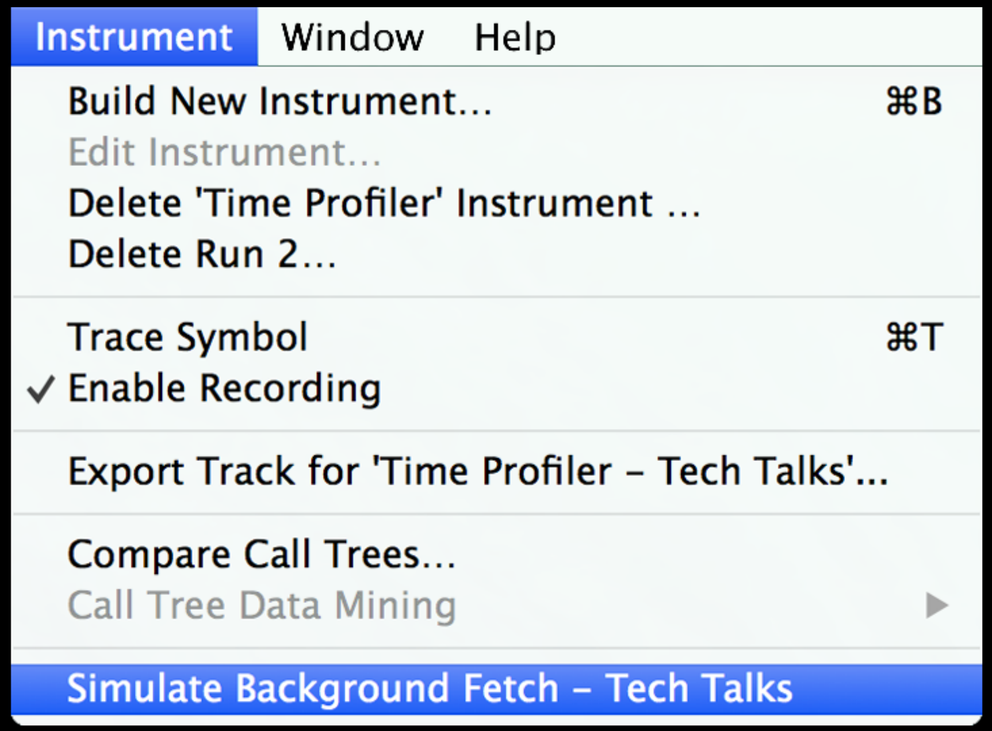




Profiling Background Fetch

Instruments

Profiling Background Fetch



Instruments

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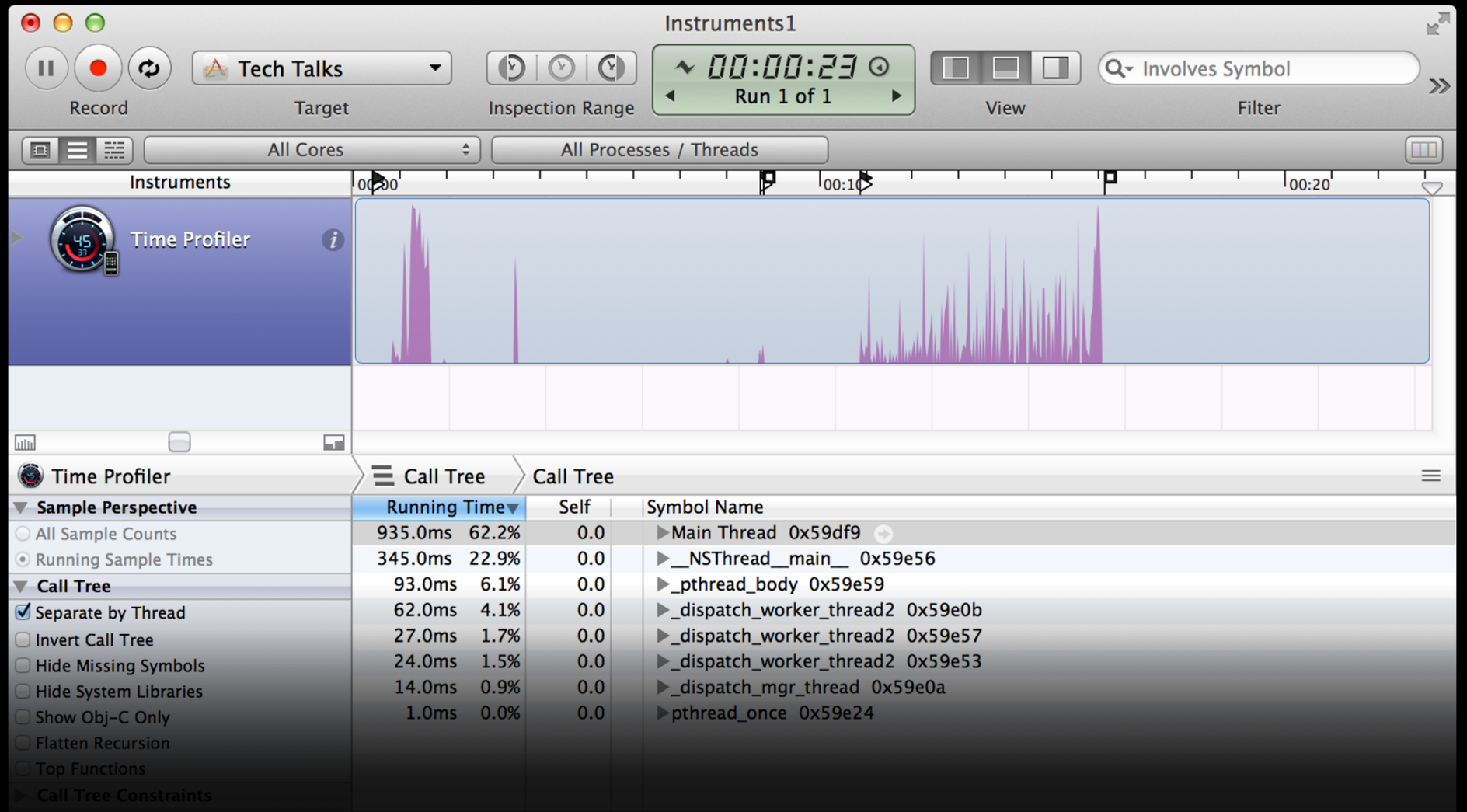

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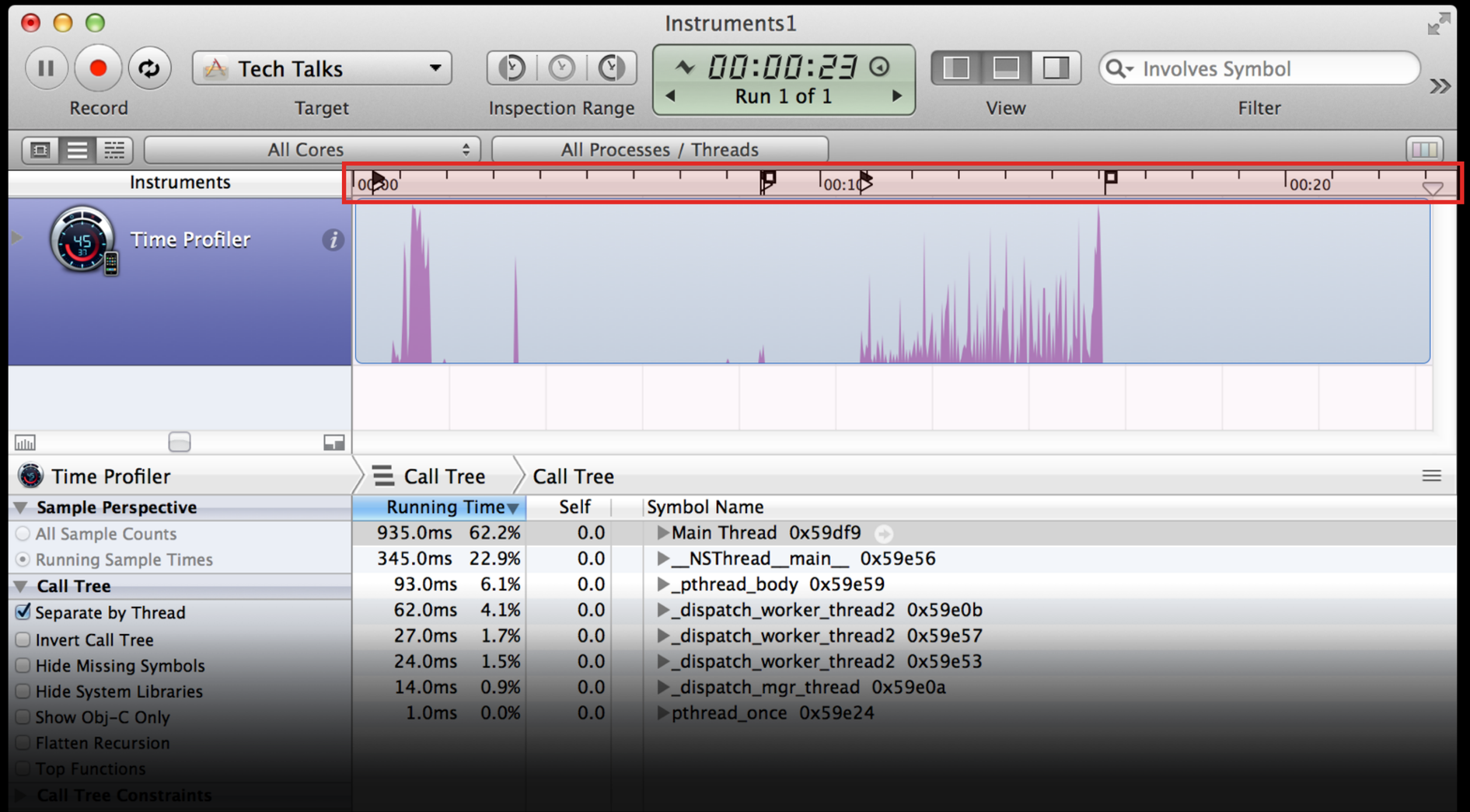

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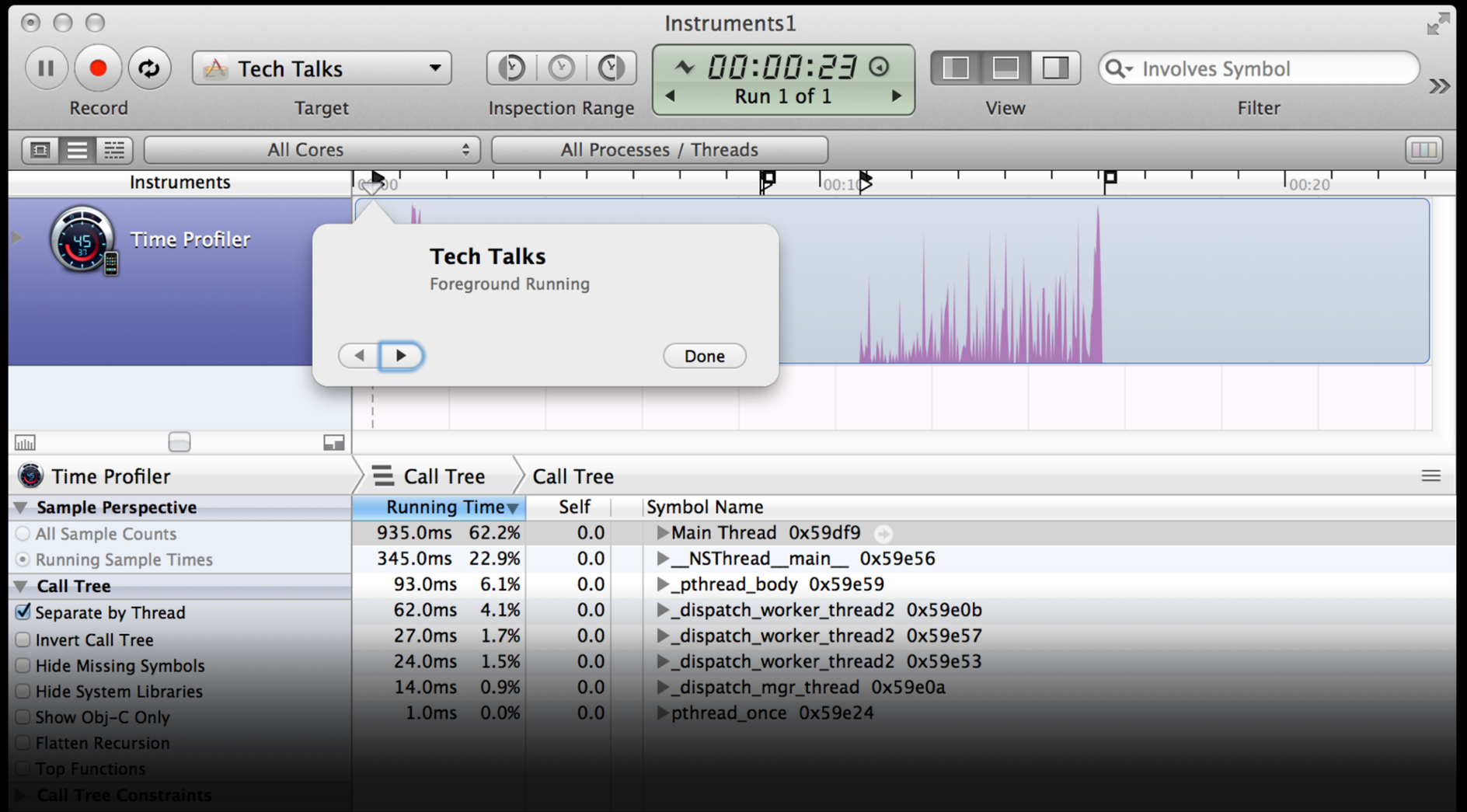

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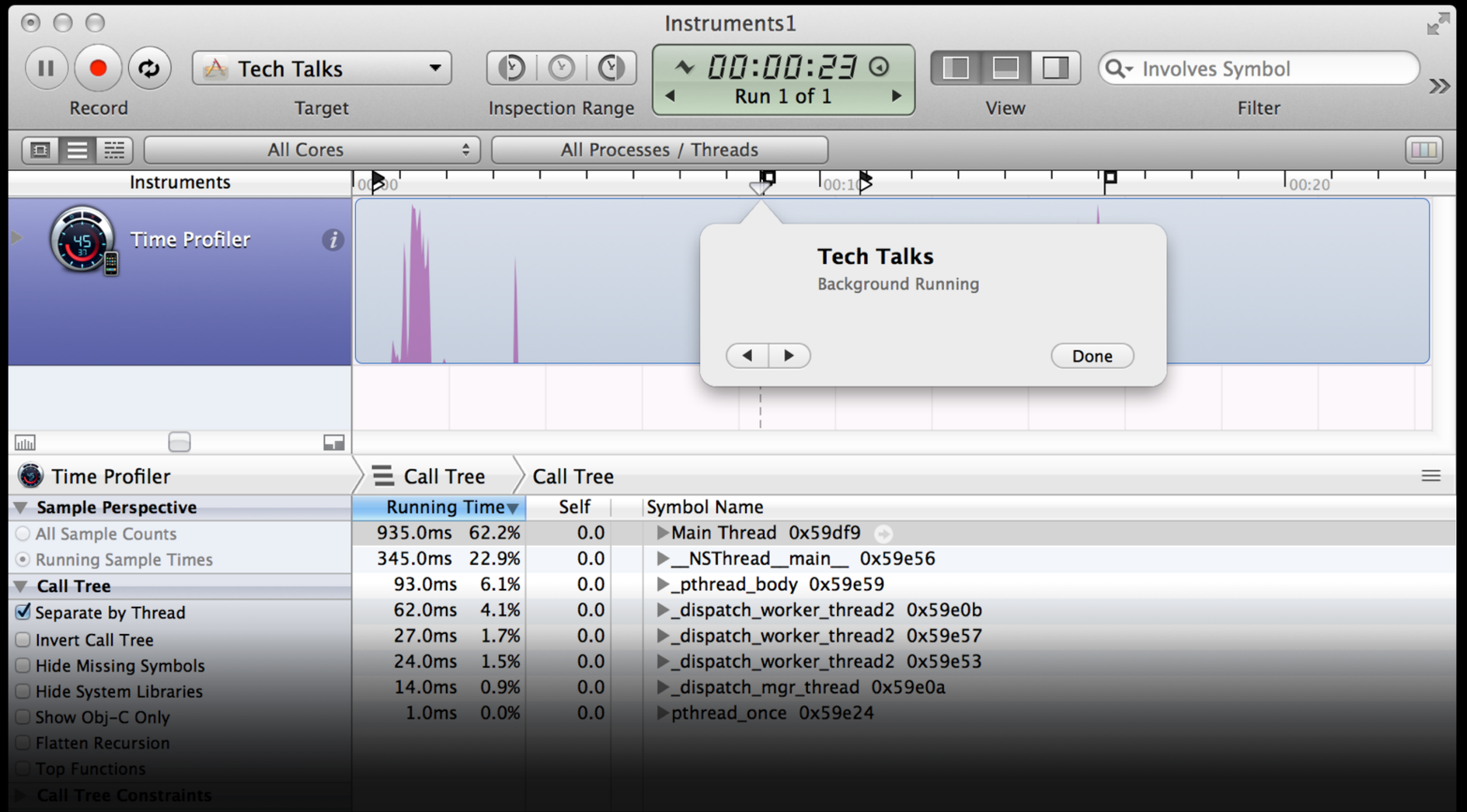

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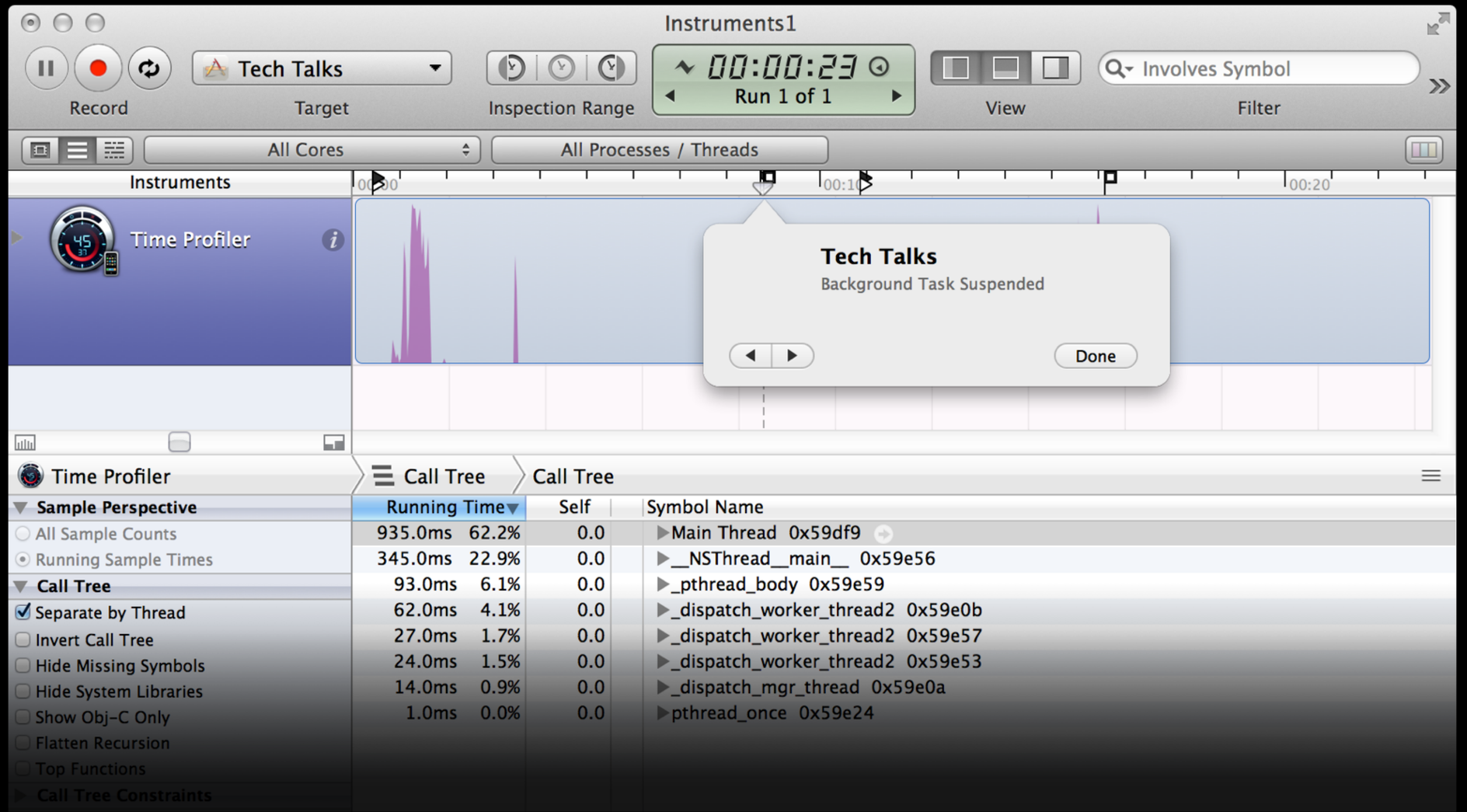

Instruments

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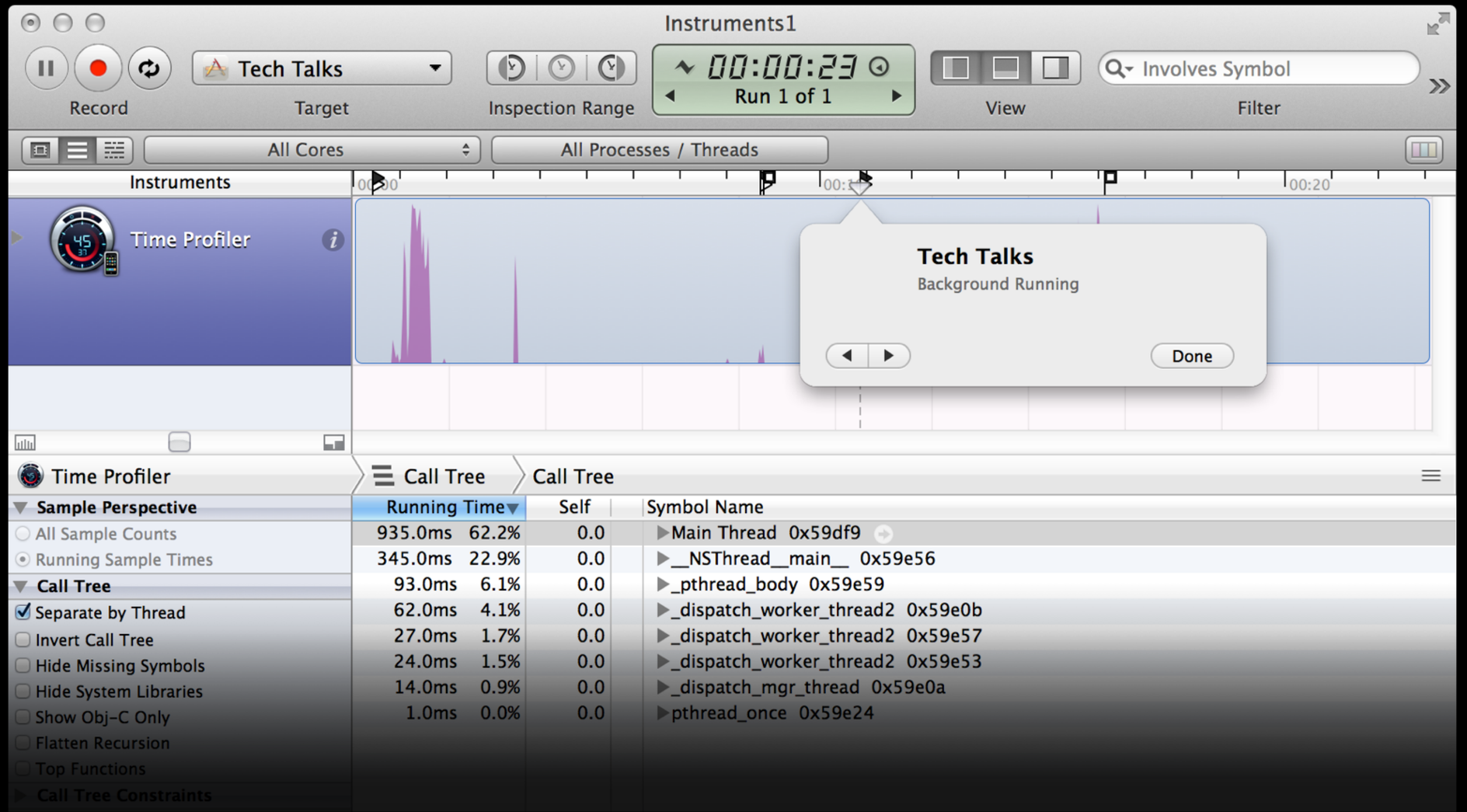

Instruments

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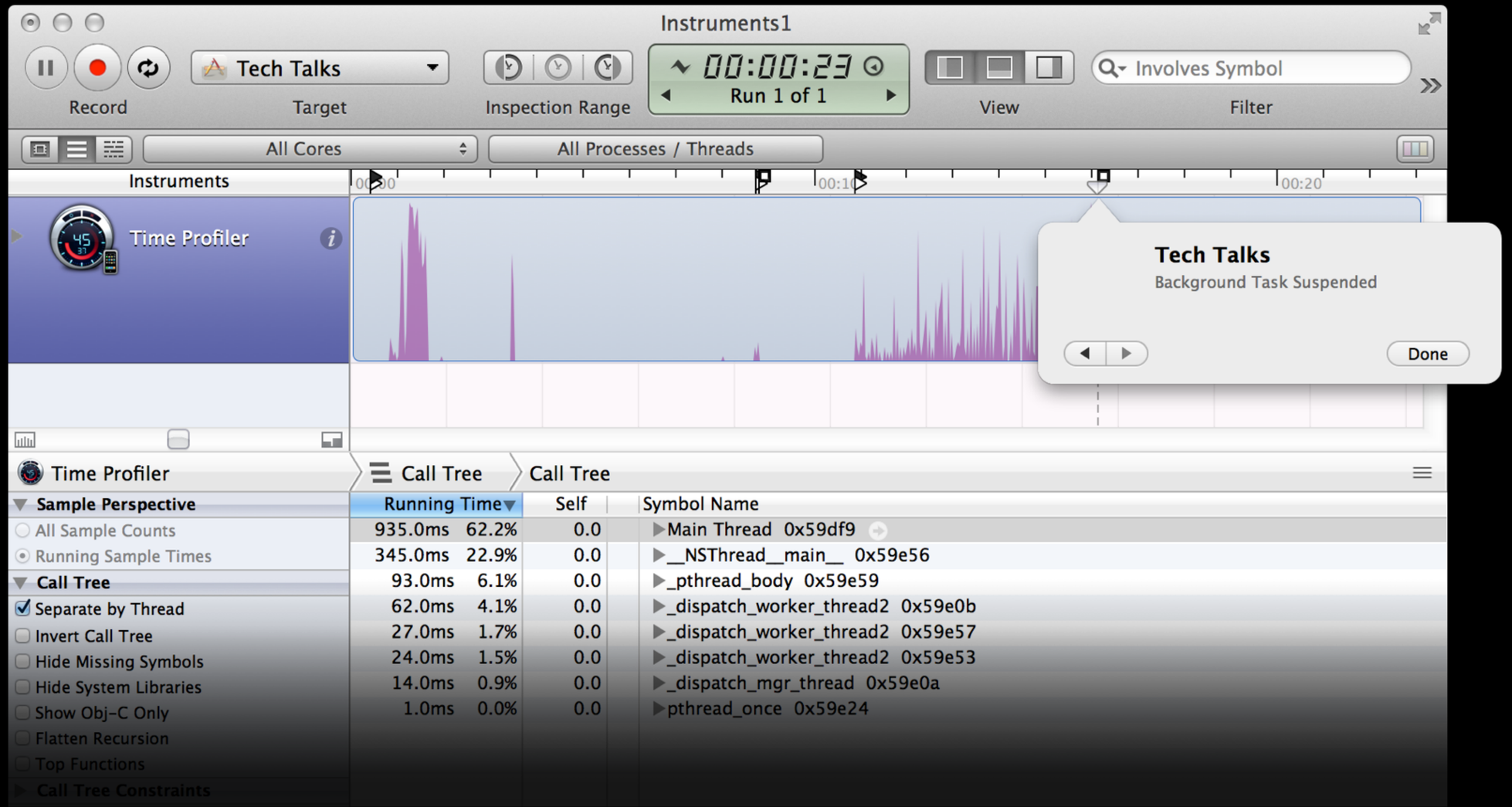

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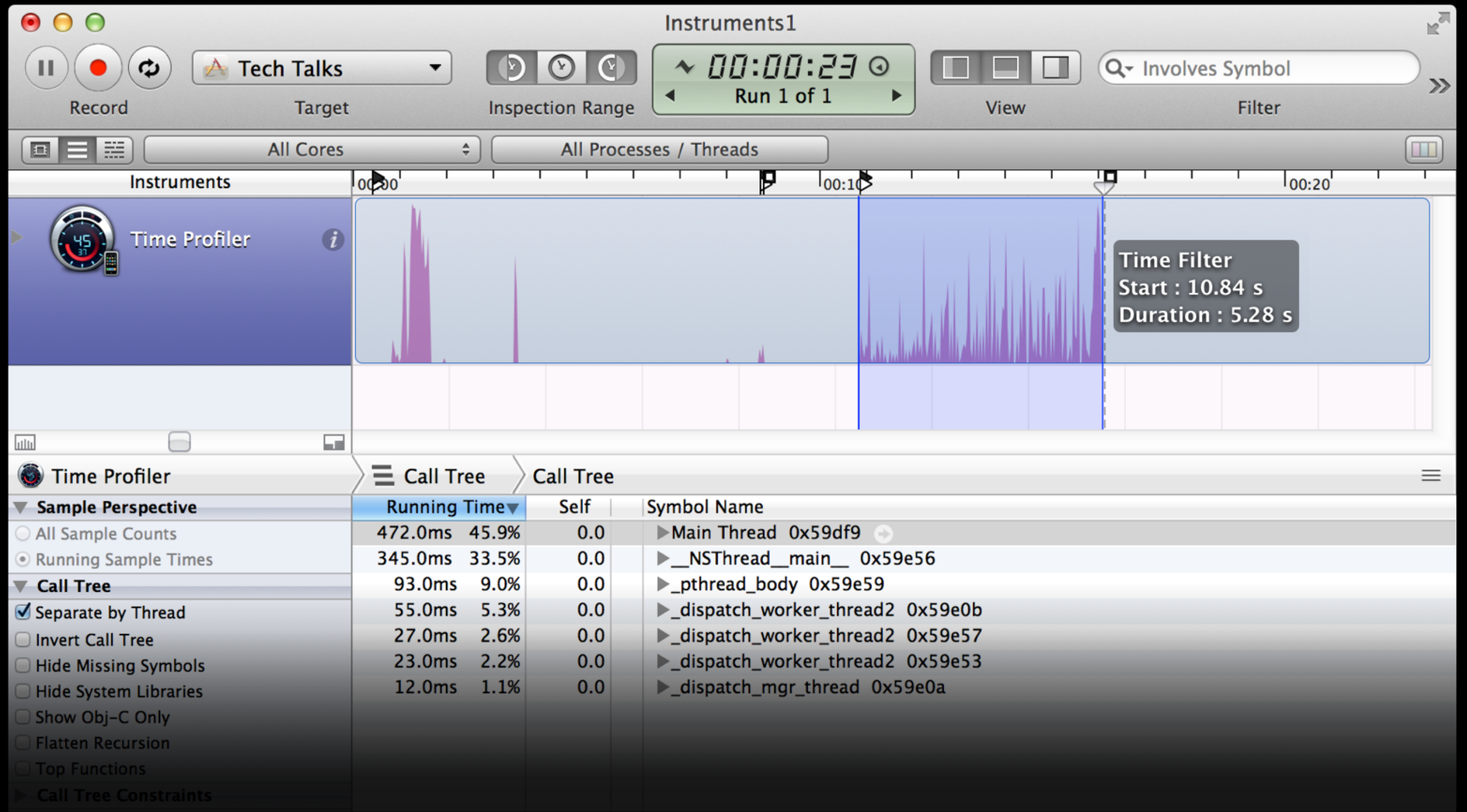

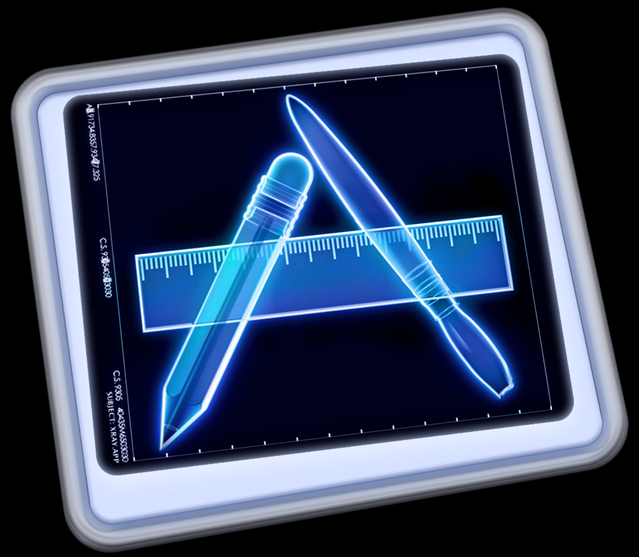

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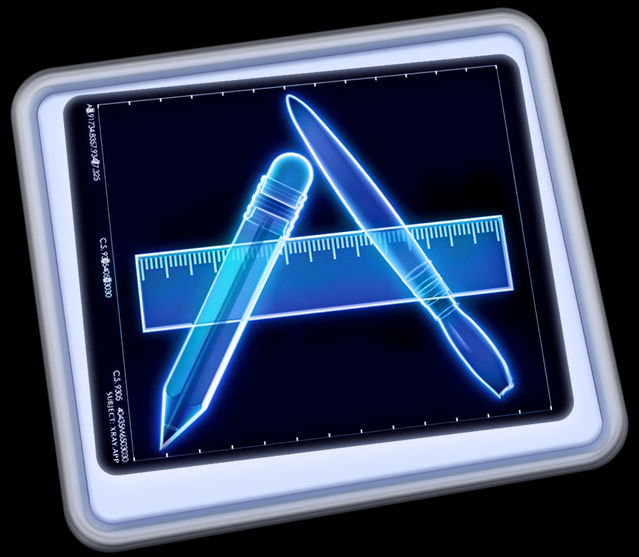
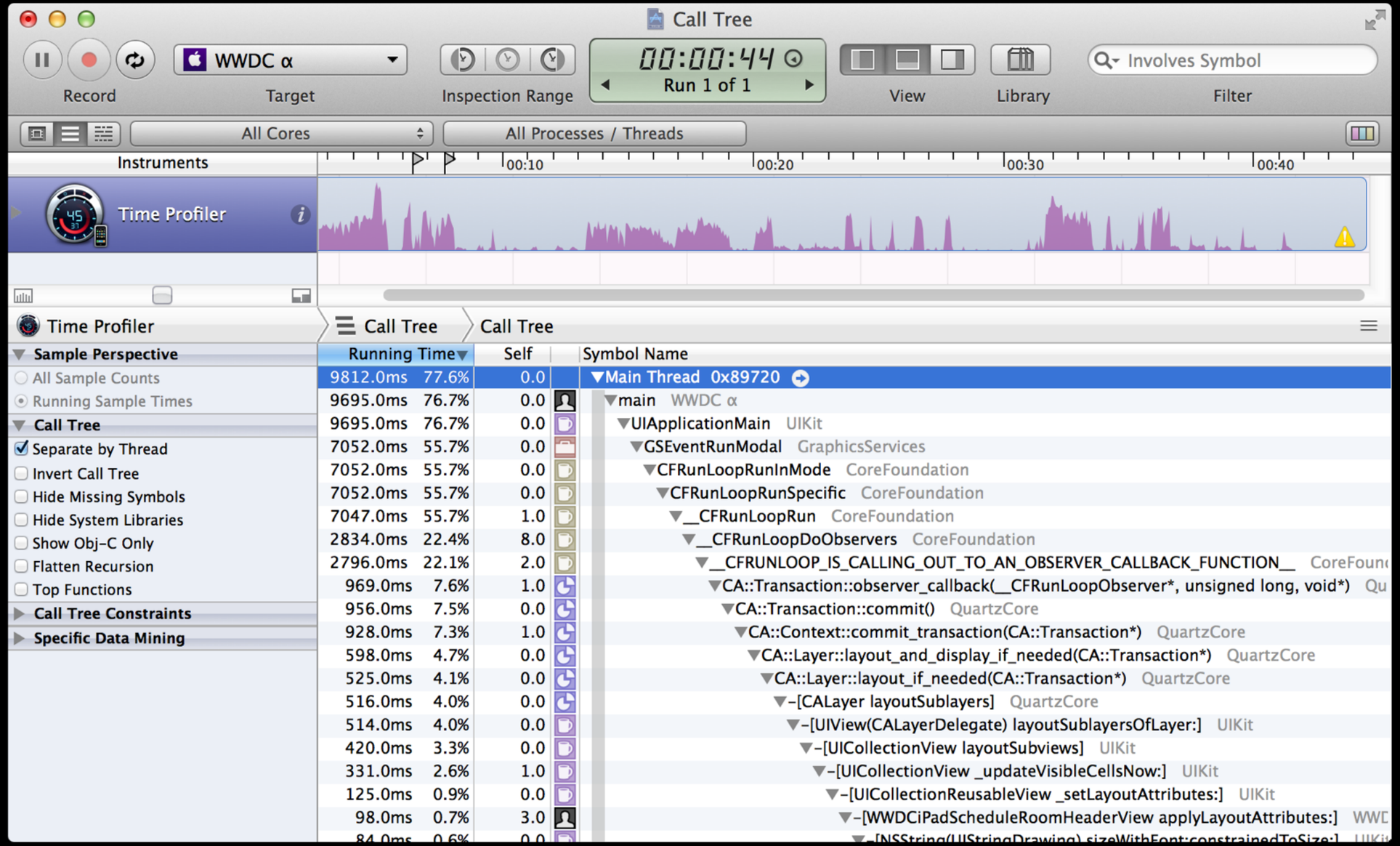
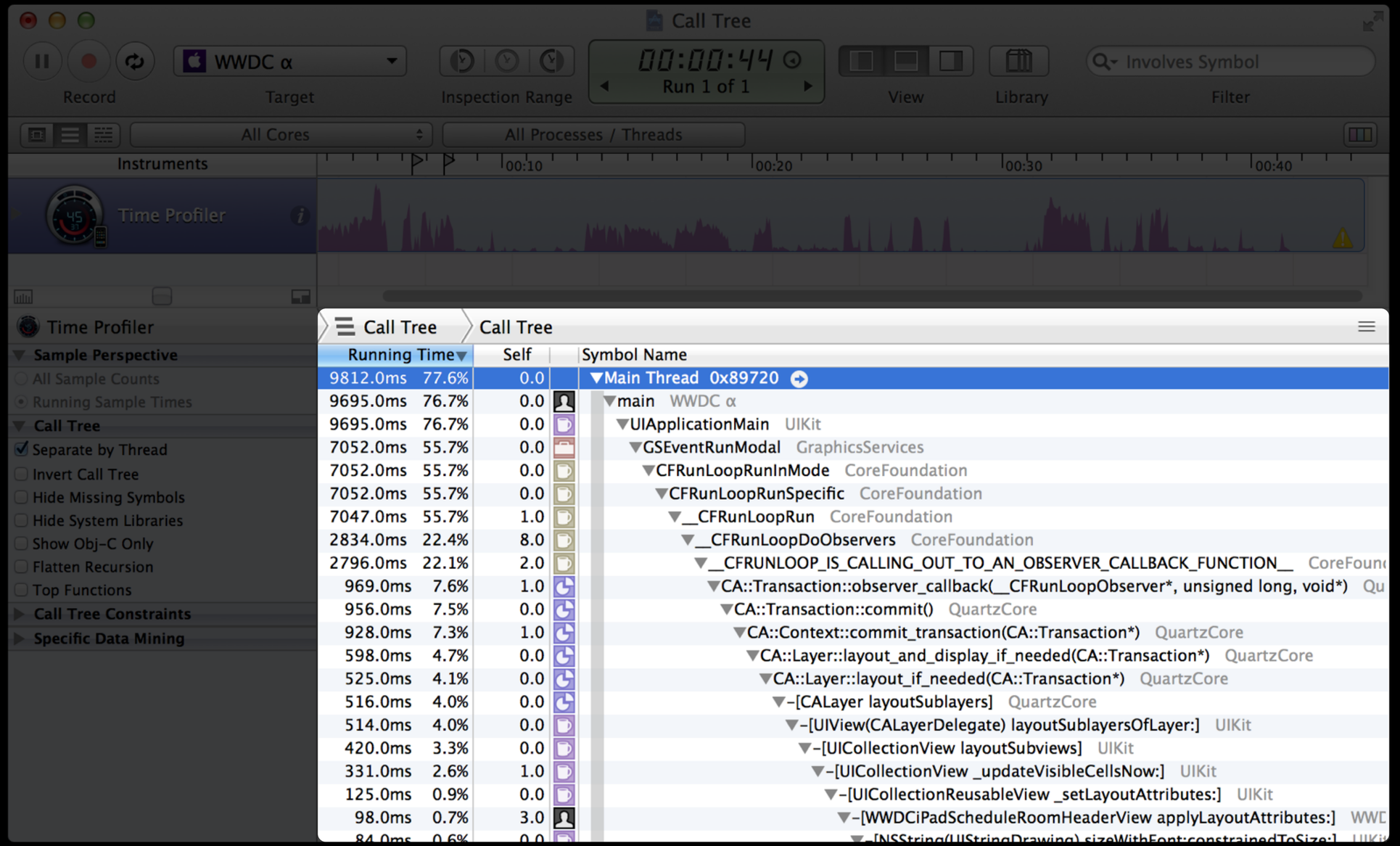


Profiling Background Fetch

Call Trees


Call Tree
Record
WWDC α
Target
Inspection Range
00:00:44
Run 1 of 1
View
Library
Involves Symbol
Filter
All Cores
All Processes / Threads
Instruments
00:10
00:20
00:30
00:40
Time Profiler
Time Profiler
Call Tree
Call Tree
Sample Perspective
All Sample Counts
Running Sample Times
Call Tree
Separate by Thread
Invert Call Tree
Hide Missing Symbols
Hide System Libraries
Show Obj-C Only
Flatten Recursion
Top Functions
Call Tree Constraints
Specific Data Mining
Running Time
Self
Symbol Name
9812.0ms 77.6% 0.0 Main Thread 0x89720
9695.0ms 76.7% 0.0 main WWDC α
9695.0ms 76.7% 0.0 UIApplicationMain UIKit
7052.0ms 55.7% 0.0 GSEventRunModal GraphicsServices
7052.0ms 55.7% 0.0 CFRunLoopRunInMode CoreFoundation
7052.0ms 55.7% 0.0 CFRunLoopRunSpecific CoreFoundation
7047.0ms 55.7% 1.0 __CFRunLoopRun CoreFoundation
2834.0ms 22.4% 8.0 __CFRunLoopDoObservers CoreFoundation
2796.0ms 22.1% 2.0 __CFRUNLOOP_IS_CALLING_OUT_TO_AN_OBSERVER_CALLBACK_FUNCTION__ CoreFoun
969.0ms 7.6% 1.0 CA::Transaction::observer_callback(__CFRunLoopObserver*, unsigned long, void*) Qu
956.0ms 7.5% 0.0 CA::Transaction::commit() QuartzCore
928.0ms 7.3% 1.0 CA::Context::commit_transaction(CA::Transaction*) QuartzCore
598.0ms 4.7% 0.0 CA::Layer::layout_and_display_if_needed(CA::Transaction*) QuartzCore
525.0ms 4.1% 0.0 CA::Layer::layout_if_needed(CA::Transaction*) QuartzCore
516.0ms 4.0% 0.0 -[CALayer layoutSublayers] QuartzCore
514.0ms 4.0% 0.0 -[UIView(CALayerDelegate) layoutSublayersOfLayer:] UIKit
420.0ms 3.3% 0.0 -[UICollectionView layoutSubviews] UIKit
331.0ms 2.6% 1.0 -[UICollectionView _updateVisibleCellsNow:] UIKit
125.0ms 0.9% 0.0 -[UICollectionReusableView _setLayoutAttributes:] UIKit
98.0ms 0.7% 3.0 -[WWDCiPadScheduleRoomHeaderView applyLayoutAttributes:] WWD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00:30
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Time Profiler
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Sample Perspective
All Sample Counts
Running Sample Times
Call Tree
Separate by Thread
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Call Tree Constraints
Specific Data Mining
Call Tree
Call Tree
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525.0ms 4.1% 0.0 CA::Layer::layout_if_needed(CA::Transaction*) QuartzCore
516.0ms 4.0% 0.0 -[CALayer layoutSublayers] QuartzCore
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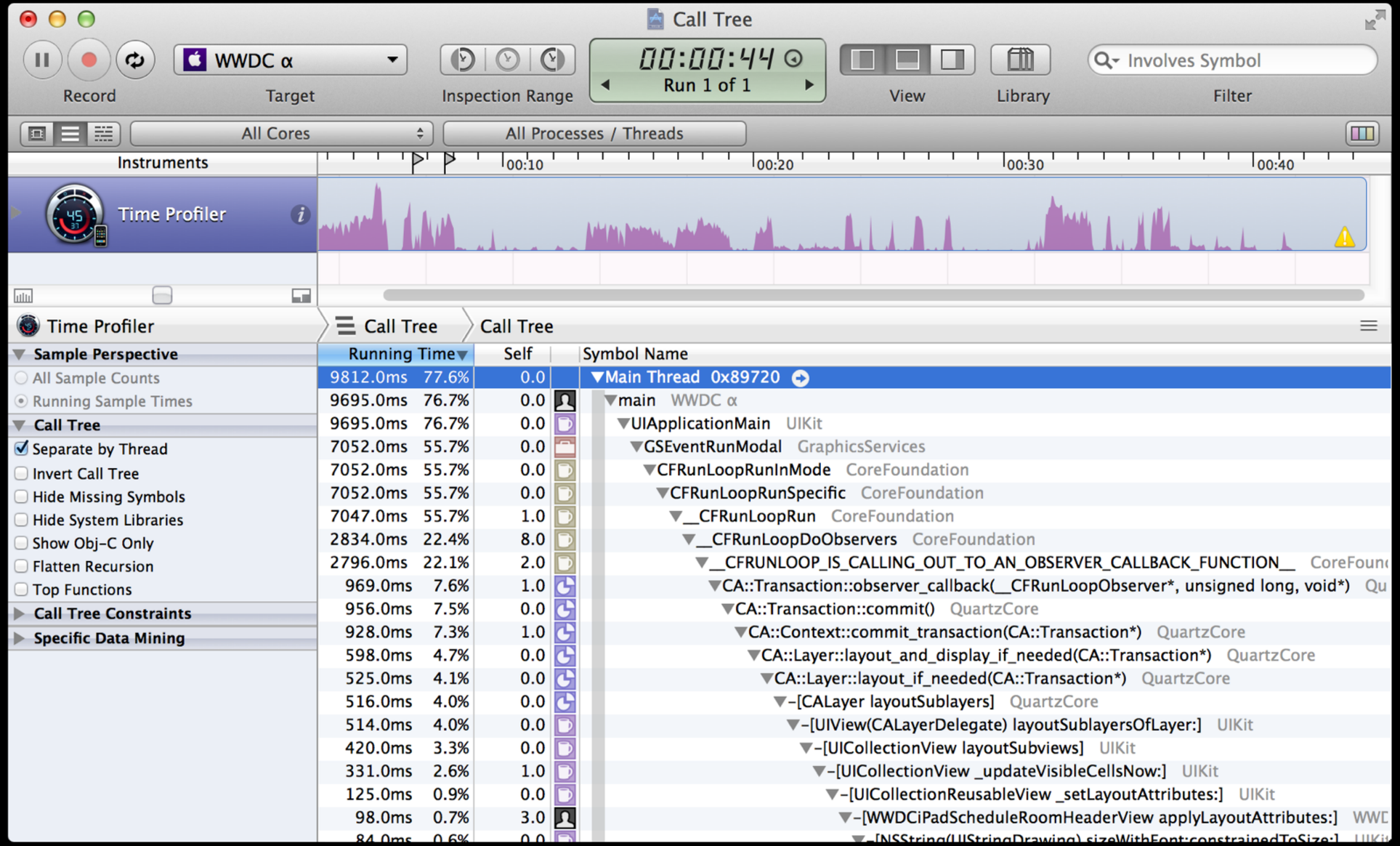
Call Tree
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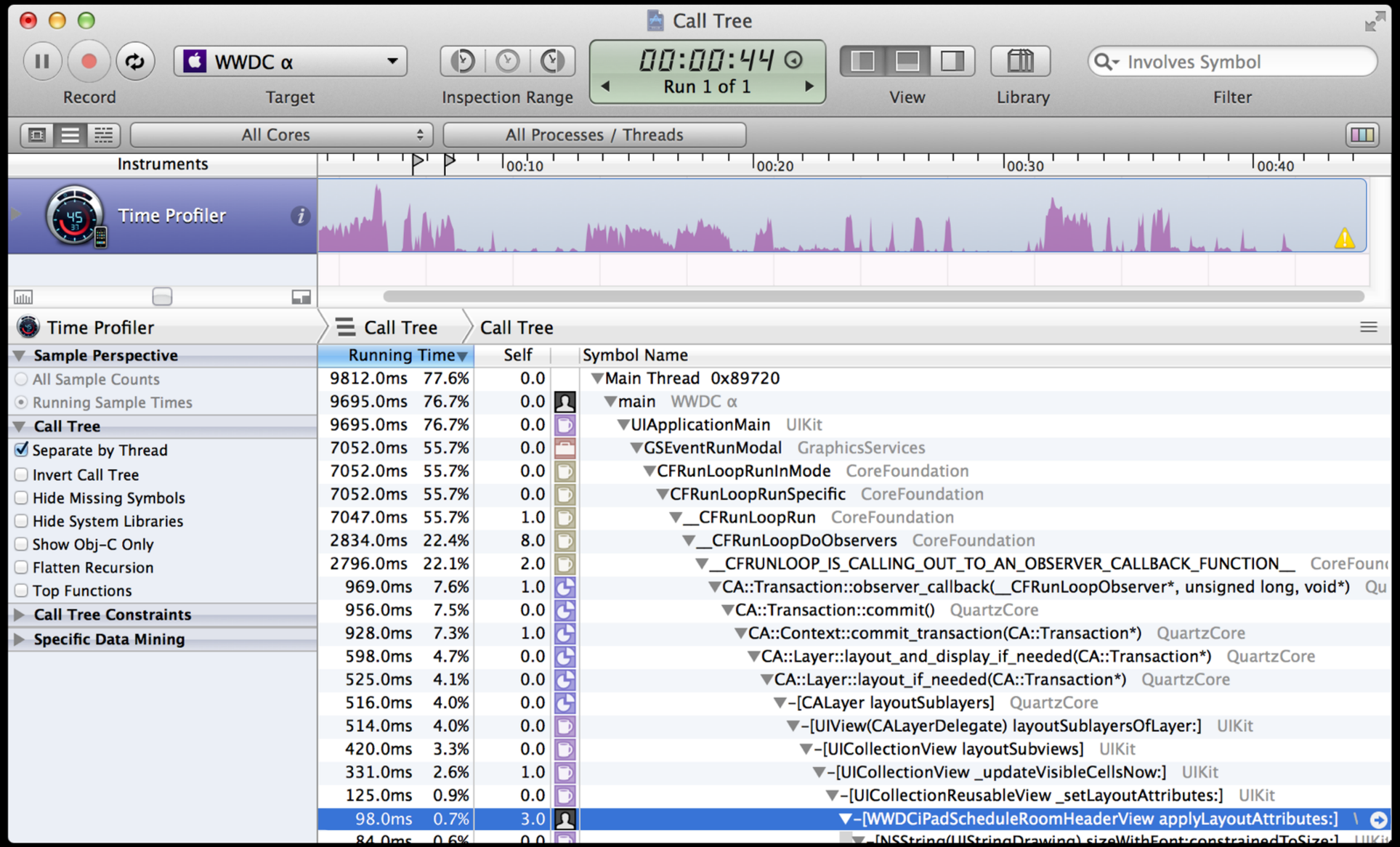
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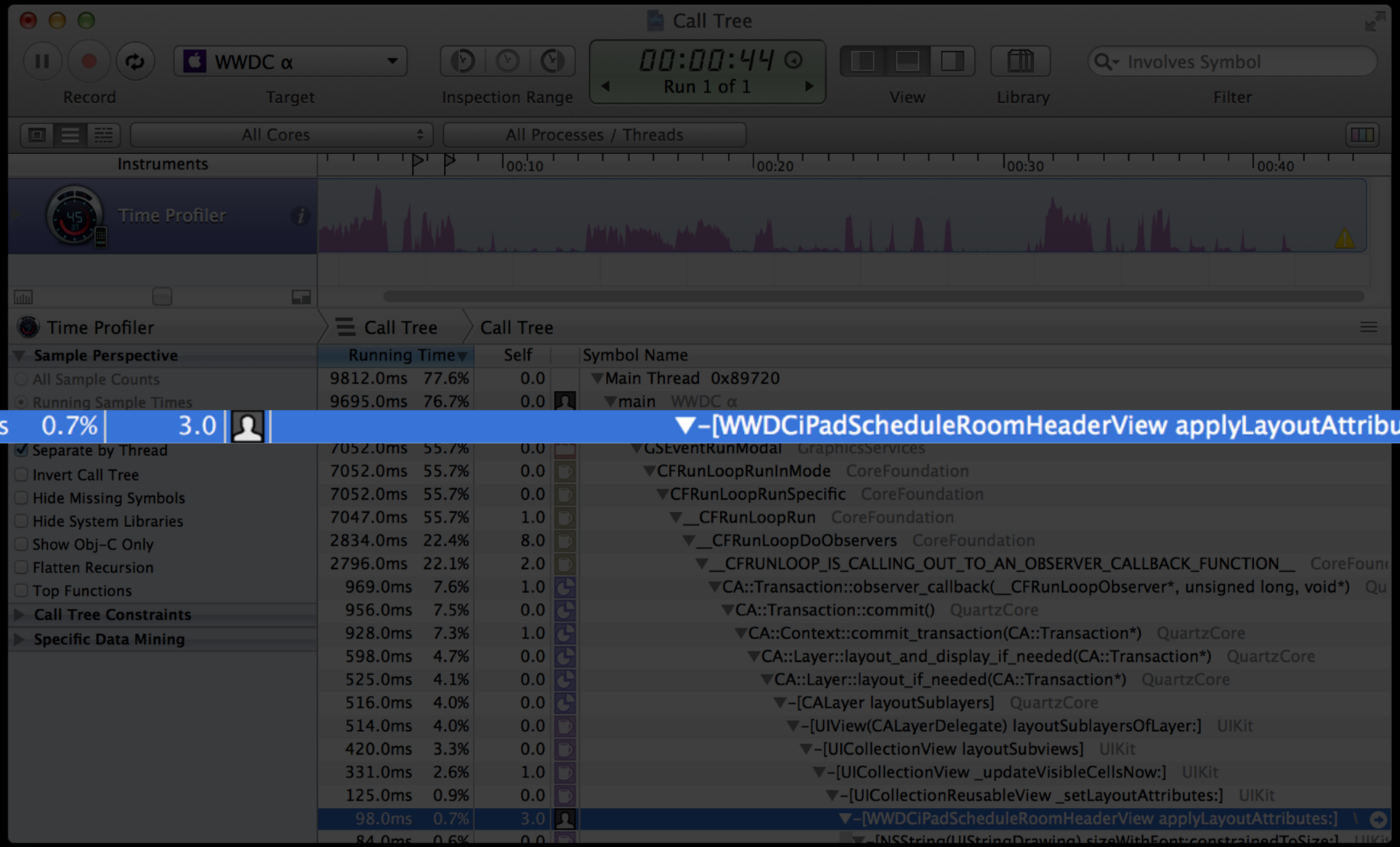
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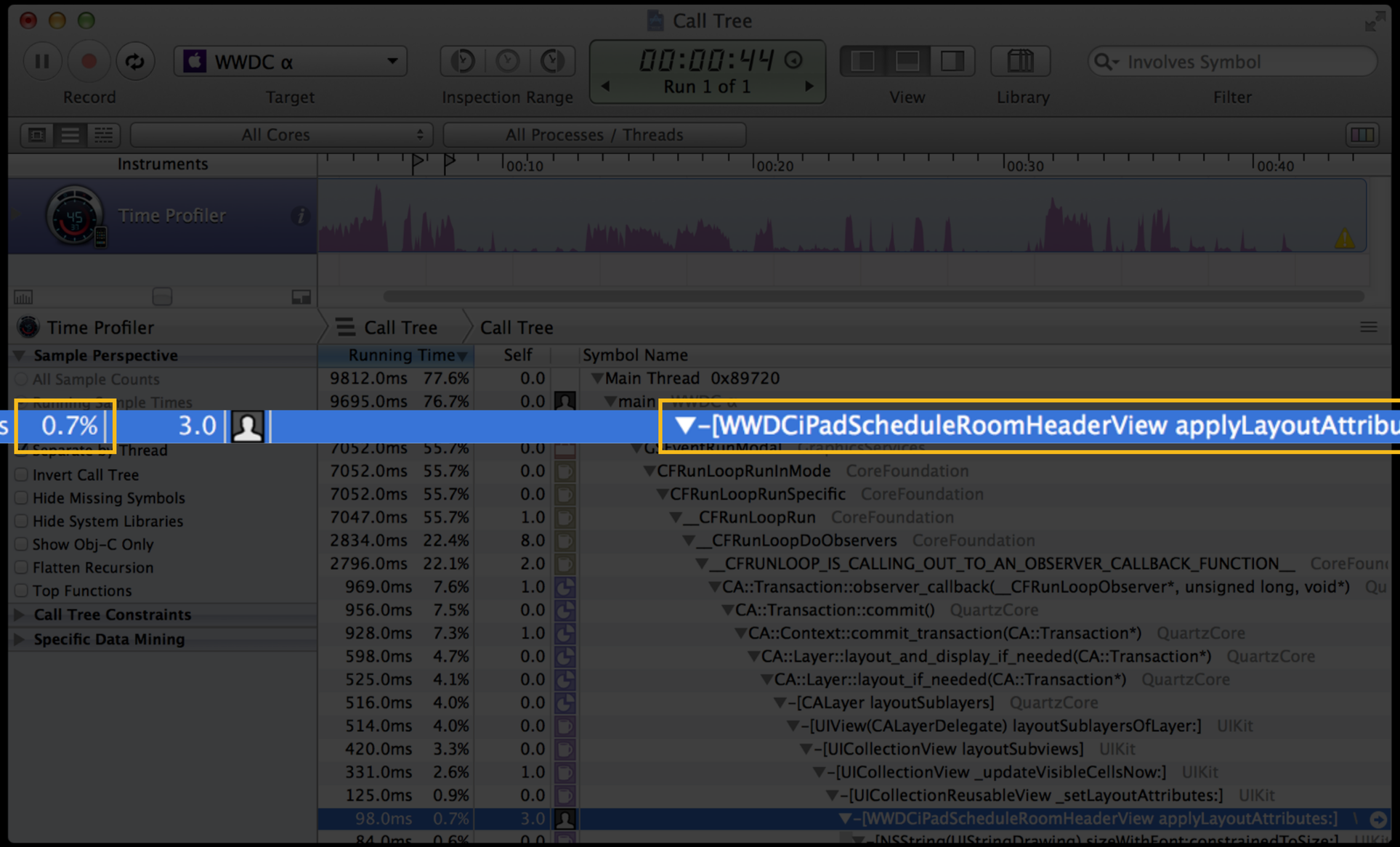
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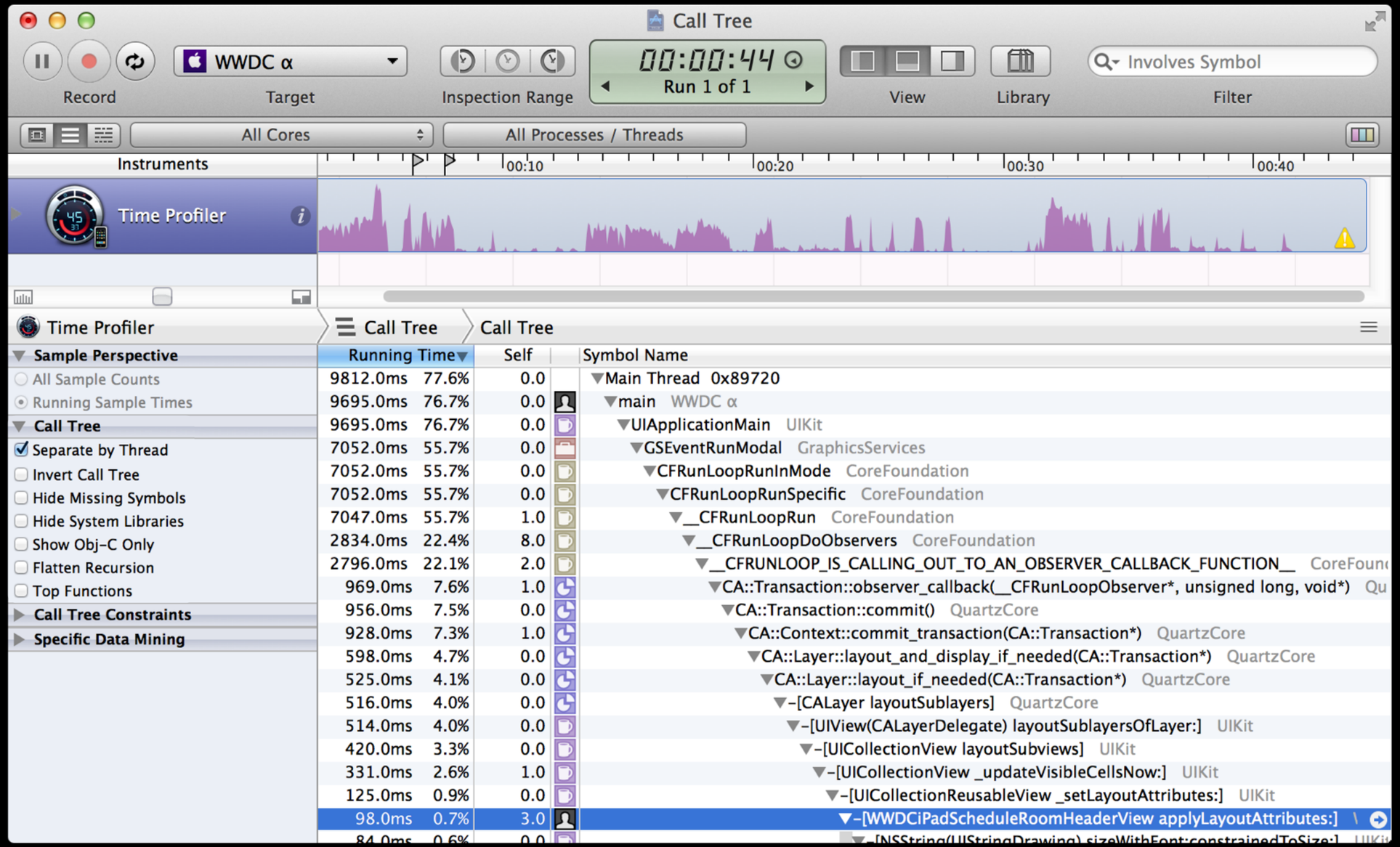
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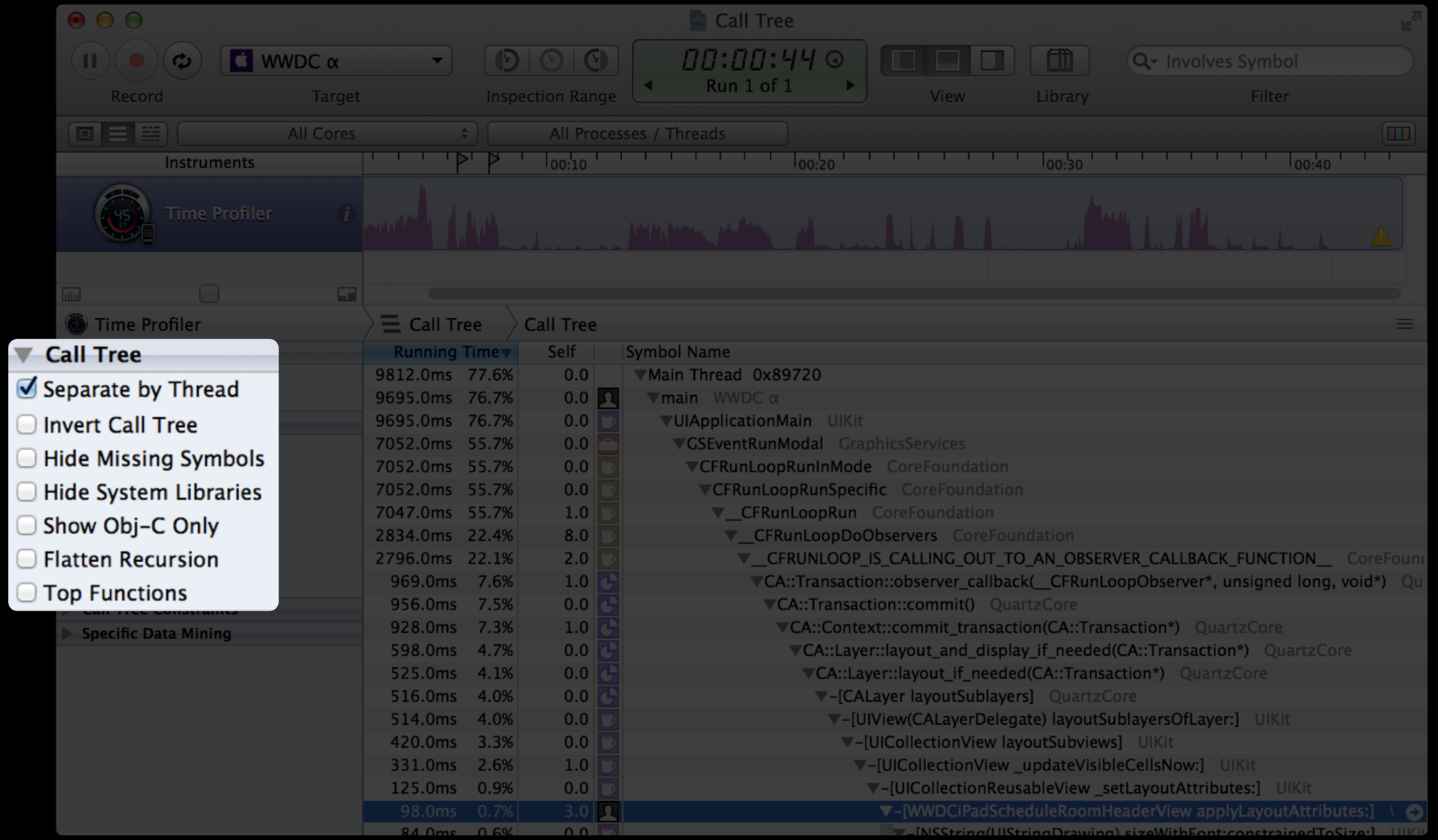
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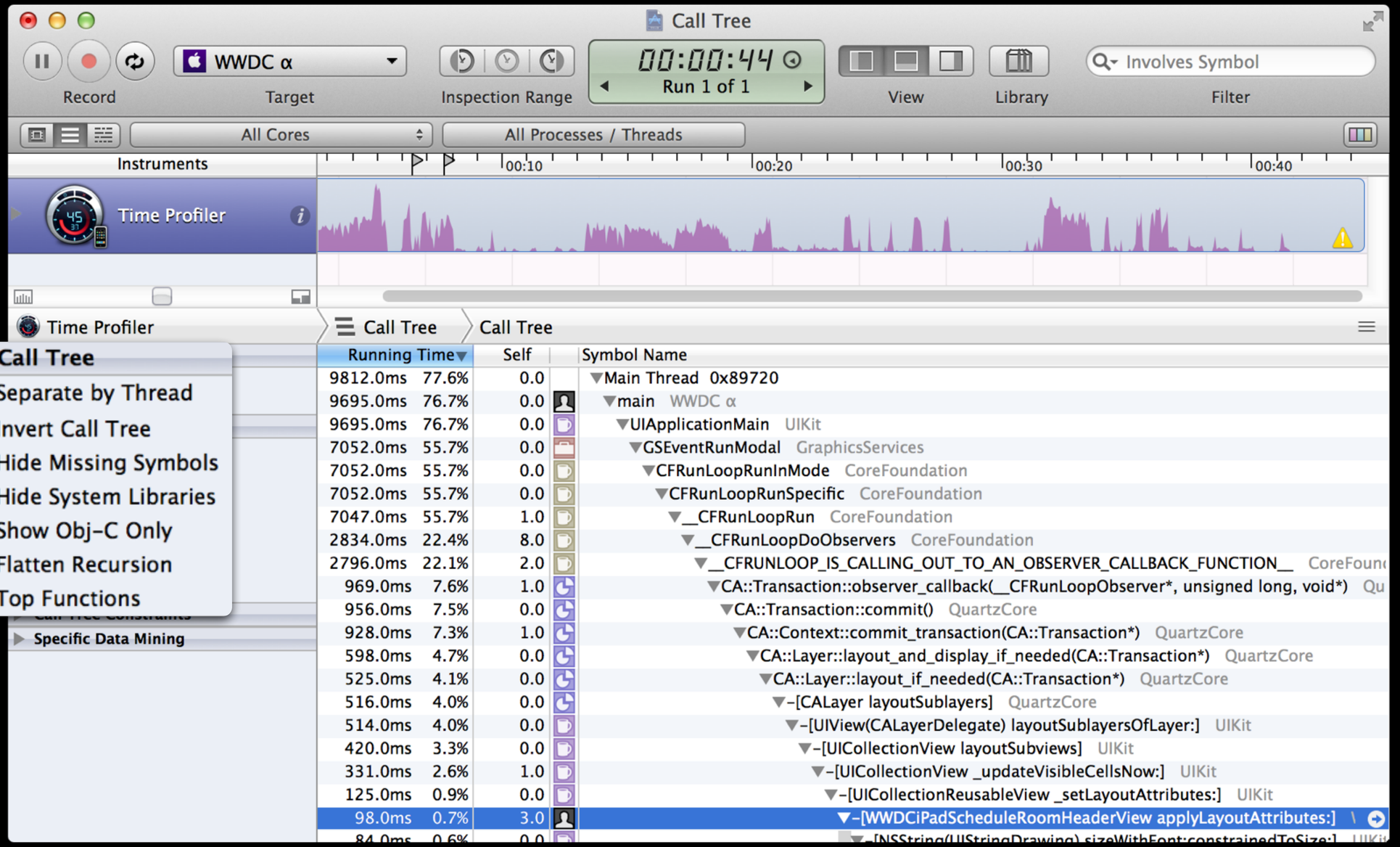
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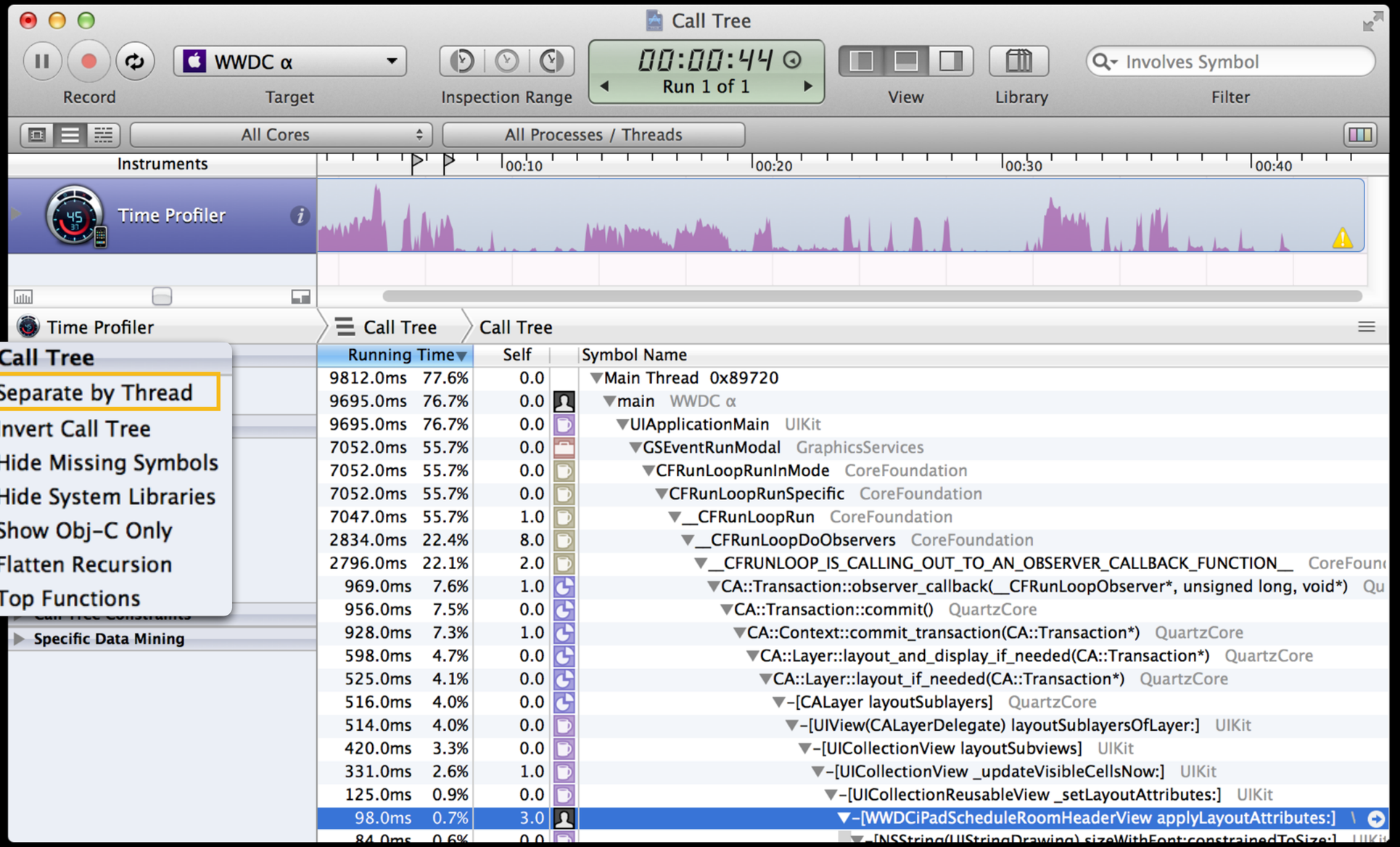
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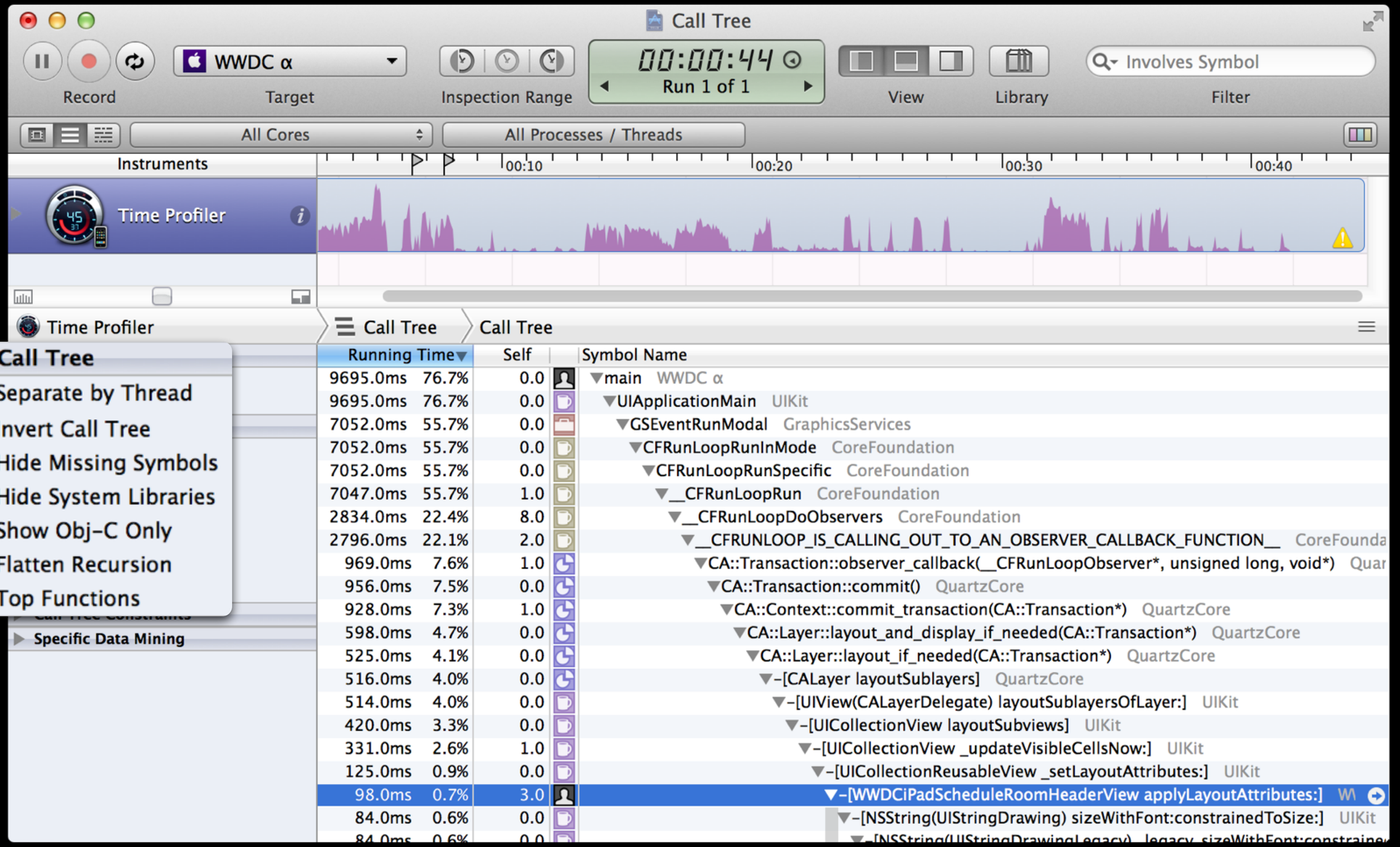
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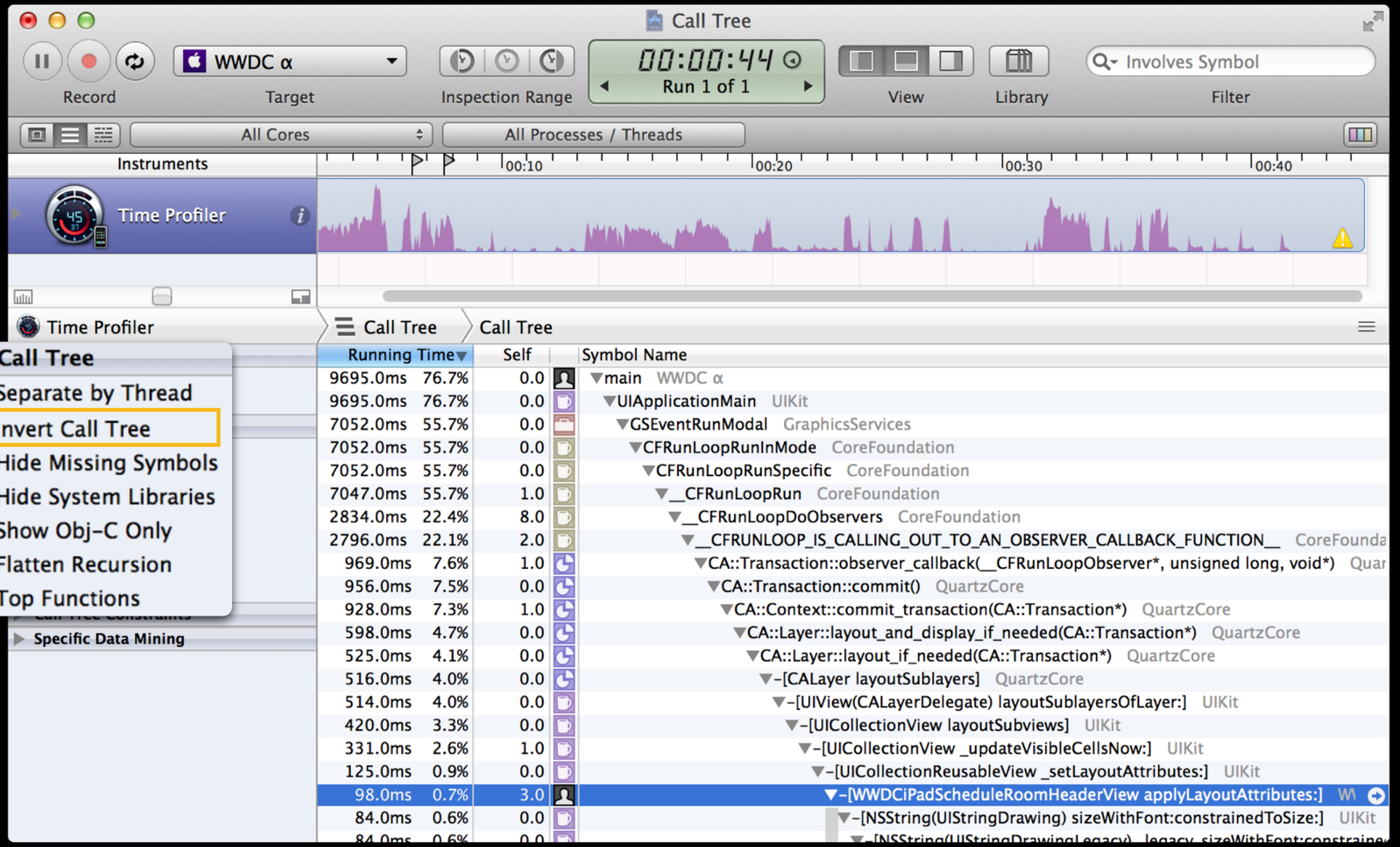
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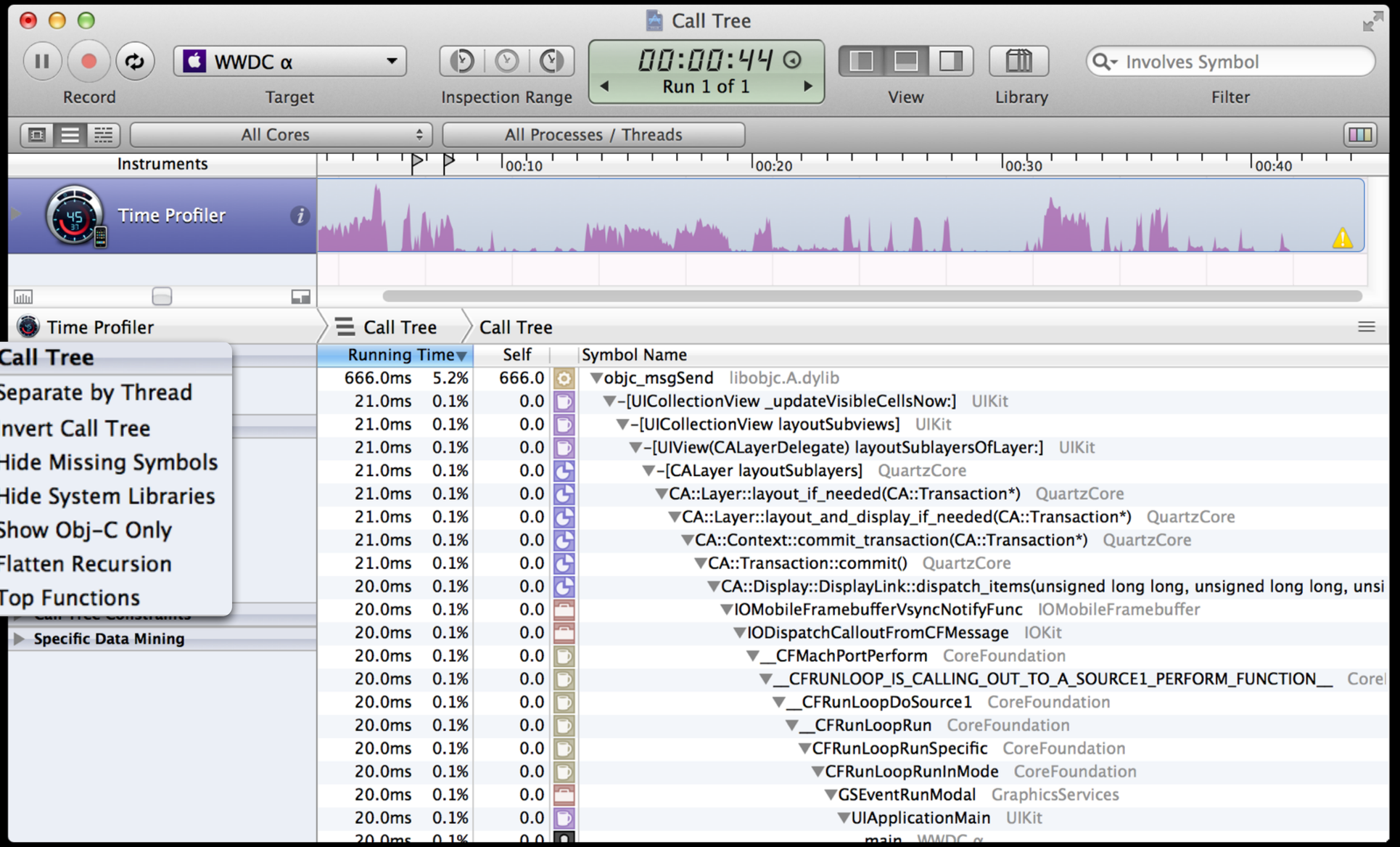
7052.0ms 55.7% 0.0 CFRunLoopRunSpecific CoreFoundation
7047.0ms 55.7% 1.0 __CFRunLoopRun CoreFoundation
2834.0ms 22.4% 8.0 __CFRunLoopDoObservers CoreFoundation
2796.0ms 22.1% 2.0 __CFRUNLOOP_IS_CALLING_OUT_TO_AN_OBSERVER_CALLBACK_FUNCTION__ CoreFounda
969.0ms 7.6% 1.0 CA::Transaction::observer_callback(__CFRunLoopObserver*, unsigned long, void*) Quar
956.0ms 7.5% 0.0 CA::Transaction::commit() QuartzCore
928.0ms 7.3% 1.0 CA::Context::commit_transaction(CA::Transaction*) QuartzCore
598.0ms 4.7% 0.0 CA::Layer::layout_and_display_if_needed(CA::Transaction*) QuartzCore
525.0ms 4.1% 0.0 CA::Layer::layout_if_needed(CA::Transaction*) QuartzCore
516.0ms 4.0% 0.0 -[CALayer layoutSublayers] QuartzCore
514.0ms 4.0% 0.0 -[UIView(CALayerDelegate) layoutSublayersOfLayer:] UIKit
420.0ms 3.3% 0.0 -[UICollectionView layoutSubviews] UIKit
331.0ms 2.6% 1.0 -[UICollectionView _updateVisibleCellsNow:] UIKit
125.0ms 0.9% 0.0 -[UICollectionReusableView _setLayoutAttributes:] UIKit
98.0ms 0.7% 3.0 -[WWDCiPadScheduleRoomHeaderView applyLayoutAttributes:]
84.0ms 0.6% 0.0 -[NSString(UIStringDrawing) sizeWithFont:constrainedToSize:] UIKit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WWDC α
Target
Inspection Range
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Run 1 of 1
View
Library
Involves Symbol
Filter
All Cores
All Processes / Threads
Instruments
00:10
00:20
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Time Profiler
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Call Tree
Call Tree
Call Tree
Separate by Thread
Invert Call Tree
Hide Missing Symbols
Hide System Libraries
Show Obj-C Only
Flatten Recursion
Top Functions
Specific Data Mining
Running Time
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Symbol Name
666.0ms 5.2% 666.0 objc_msgSend libobjc.A.dylib
21.0ms 0.1% 0.0 -[UICollectionView _updateVisibleCellsNow:] UIKit
21.0ms 0.1% 0.0 -[UICollectionView layoutSubviews] UIKit
21.0ms 0.1% 0.0 -[UIView(CALayerDelegate) layoutSublayersOfLayer:] UIKit
21.0ms 0.1% 0.0 -[CALayer layoutSublayers] QuartzCore
21.0ms 0.1% 0.0 CA::Layer::layout_if_needed(CA::Transaction*) QuartzCore
21.0ms 0.1% 0.0 CA::Layer::layout_and_display_if_needed(CA::Transaction*) QuartzCore
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20.0ms 0.1% 0.0 IOMobileFramebufferVsyncNotifyFunc IOMobileFramebuffer
20.0ms 0.1% 0.0 IODispatchCalloutFromCFMessage IOKit
20.0ms 0.1% 0.0 __CFMachPortPerform CoreFoundation
20.0ms 0.1% 0.0 __CFRUNLOOP_IS_CALLING_OUT_TO_A_SOURCE1_PERFORM_FUNCTION__ Core
20.0ms 0.1% 0.0 __CFRunLoopDoSource1 CoreFoundation
20.0ms 0.1% 0.0 __CFRunLoopRun CoreFoundation
20.0ms 0.1% 0.0 CFRunLoopRunSpecific CoreFoundation
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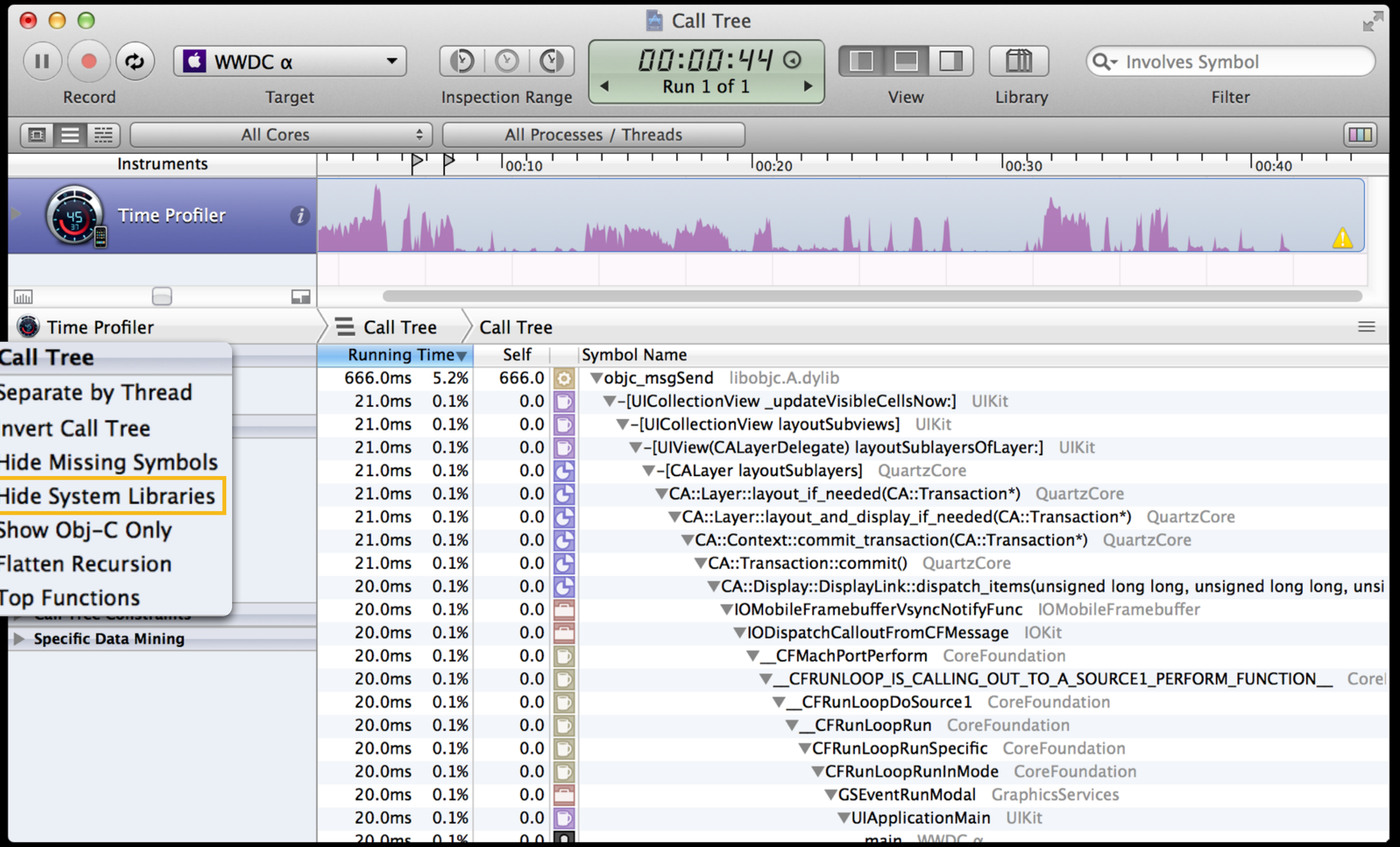
20.0ms 0.1% 0.0 GSEventRunModal GraphicsServices
20.0ms 0.1% 0.0 UIApplicationMain UIKit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21.0ms 0.1% 0.0 -[UIView(CALayerDelegate) layoutSublayersOfLayer:] UIKit
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20.0ms 0.1% 0.0 IOMobileFramebufferVsyncNotifyFunc IOMobileFramebuffer
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20.0ms 0.1% 0.0 __CFMachPortPerform CoreFoundation
20.0ms 0.1% 0.0 __CFRUNLOOP_IS_CALLING_OUT_TO_A_SOURCE1_PERFORM_FUNCTION__ Core
20.0ms 0.1% 0.0 __CFRunLoopDoSource1 CoreFoundation
20.0ms 0.1% 0.0 __CFRunLoopRun CoreFoundation
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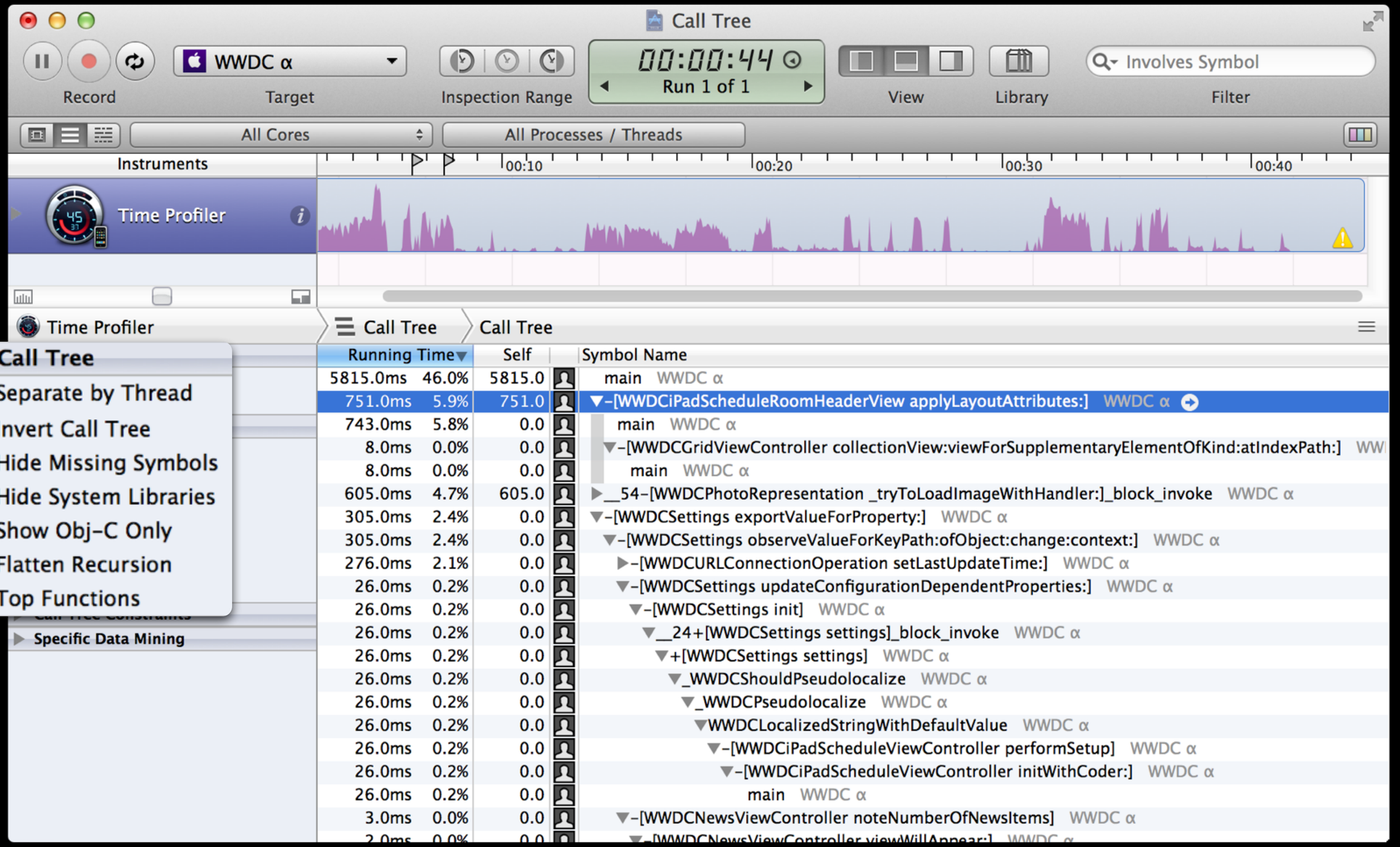
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Flatten Recursion
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Specific Data Mining
Running Time
Self
Symbol Name
5815.0ms 46.0% 5815.0 main WWDC α
751.0ms 5.9% 751.0 -[WWDCiPadScheduleRoomHeaderView applyLayoutAttributes:] WWDC α
743.0ms 5.8% 0.0 main WWDC α
8.0ms 0.0% 0.0 -[WWDCGridViewController collectionView:viewForSupplementaryElementOfKind:atIndexPath:]
8.0ms 0.0% 0.0 main WWDC α
605.0ms 4.7% 605.0 __54-[WWDCPhotoRepresentation _tryToLoadImageWithHandler:]_block_invoke WWDC α
305.0ms 2.4% 0.0 -[WWDCSettings exportValueForProperty:] WWDC α
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276.0ms 2.1% 0.0 -[WWDCURLConnectionOperation setLastUpdateTime:] WWDC α
26.0ms 0.2% 0.0 -[WWDCSettings updateConfigurationDependentProperties:] WWDC α
26.0ms 0.2% 0.0 -[WWDCSettings init] WWDC α
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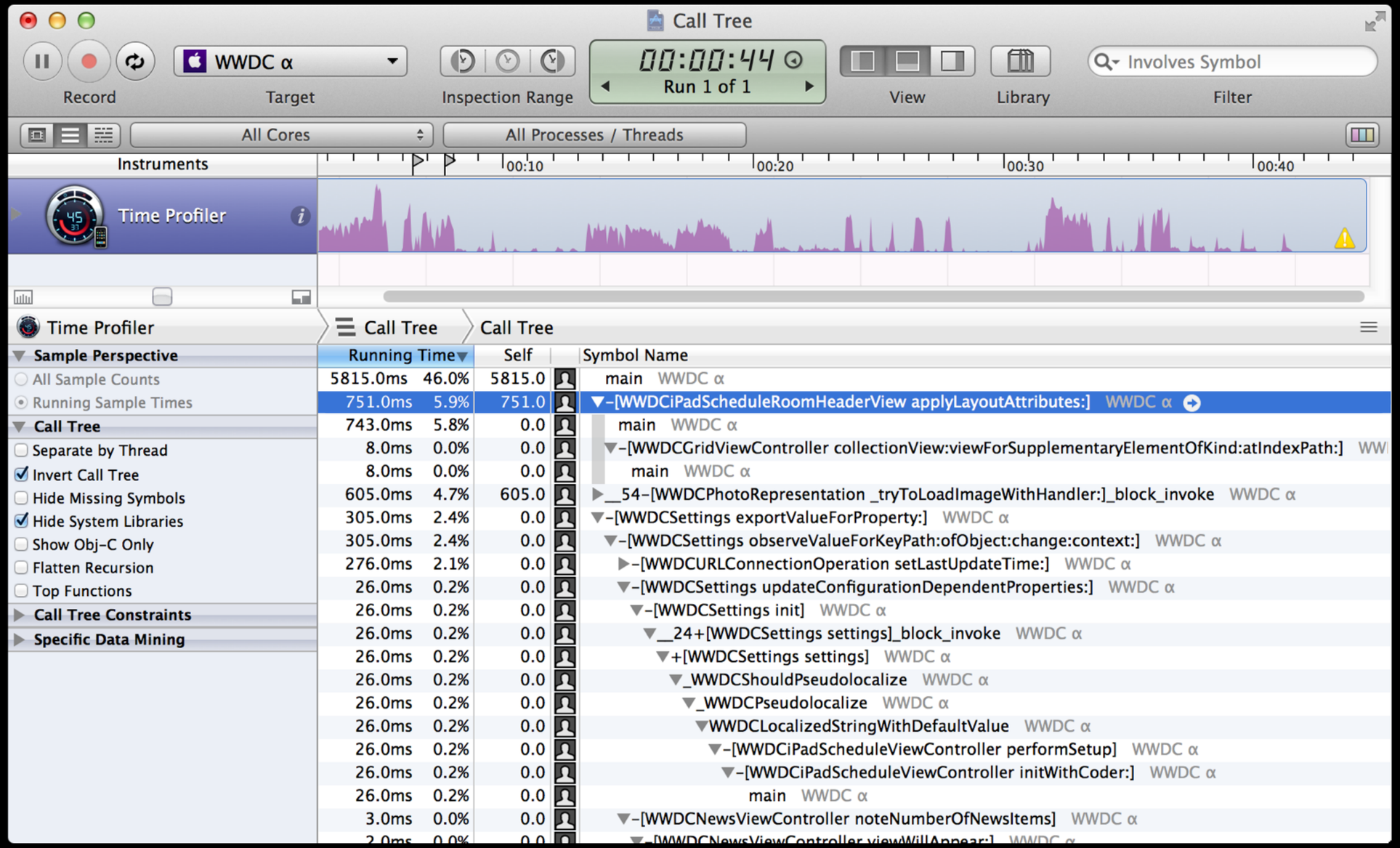
26.0ms 0.2% 0.0 +[WWDCSettings settings] WWDC α
26.0ms 0.2% 0.0 _WWDCShouldPseudolocalize WWDC α
26.0ms 0.2% 0.0 _WWDCPseudolocalize WWDC α
26.0ms 0.2% 0.0 WWDCLocalizedStringWithDefaultValue WWDC α
26.0ms 0.2% 0.0 -[WWDCiPadScheduleViewController performSetup] WWDC α
26.0ms 0.2% 0.0 -[WWDCiPadScheduleViewController initWithCoder:] WWDC α
26.0ms 0.2% 0.0 main WWDC α
3.0ms 0.0% 0.0 -[WWDCNewsViewController noteNumberOfNewsItems] WWDC α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Run 1 of 1
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Time Profiler
Time Profiler
Call Tree
Call Tree
Sample Perspective
All Sample Counts
Running Sample Times
Call Tree
Separate by Thread
Invert Call Tree
Hide Missing Symbols
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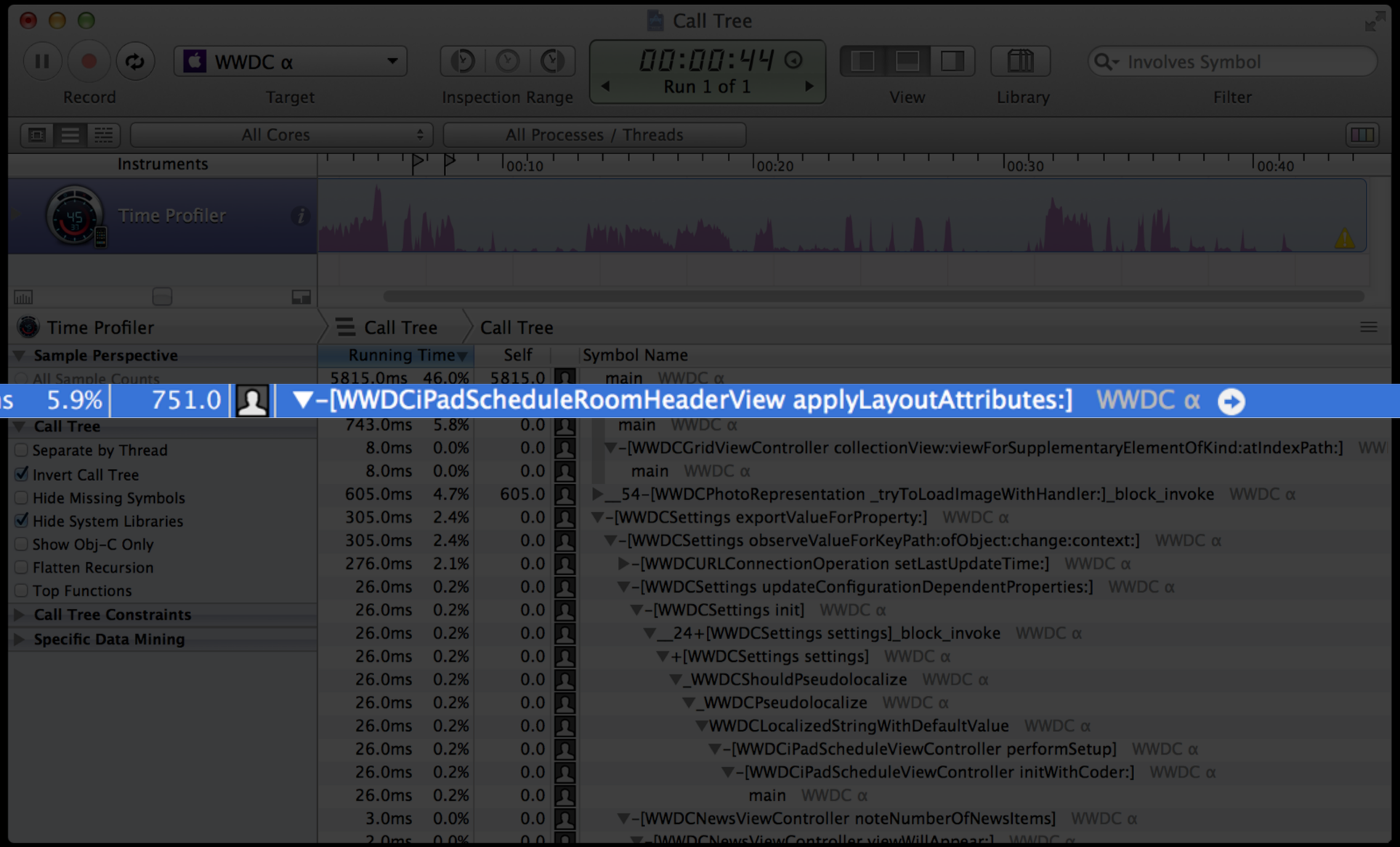
Call Tree
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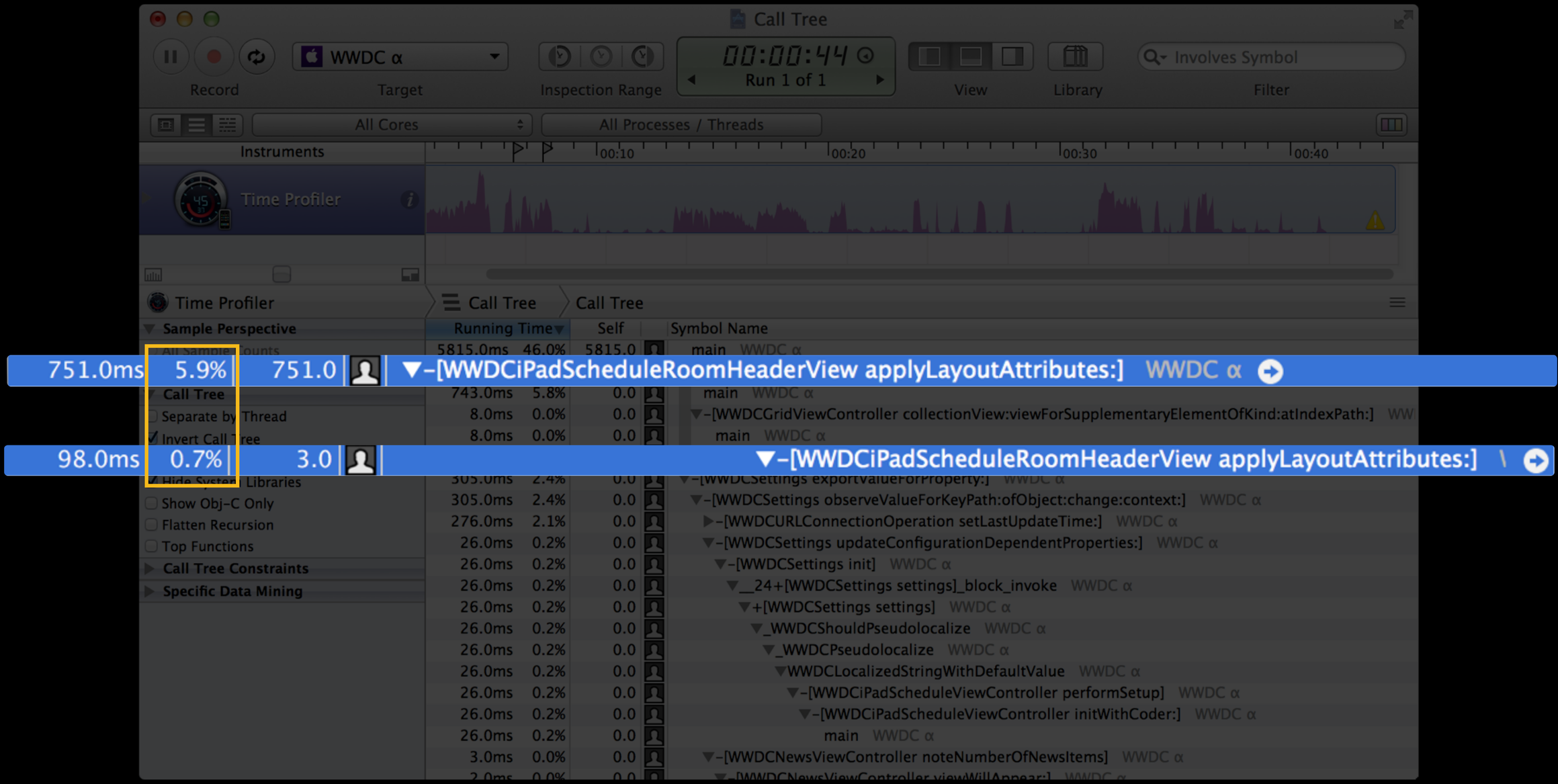
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Run 1 of 1
View
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Involves Symbol
Filter
All Cores
All Processes / Threads
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Sample Perspective
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Separate by Thread
Invert Call Tree
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Show Obj-C Only
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Top Functions
Call Tree Constraints
Specific Data Mining
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751.0ms 5.9% 751.0 ▼-[WWDCiPadScheduleRoomHeaderView applyLayoutAttributes:] WWDC α
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5815.0ms 46.0% 5815.0 main WWDC α
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26.0ms 0.2% 0.0 ▼-[WWDCiPadScheduleViewController performSetup]
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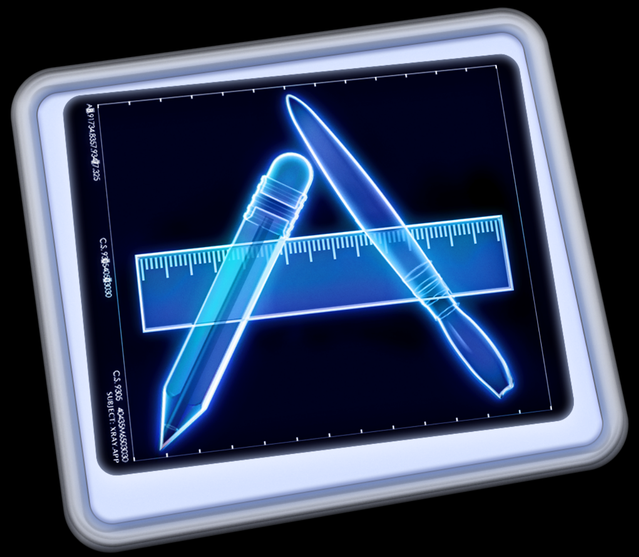
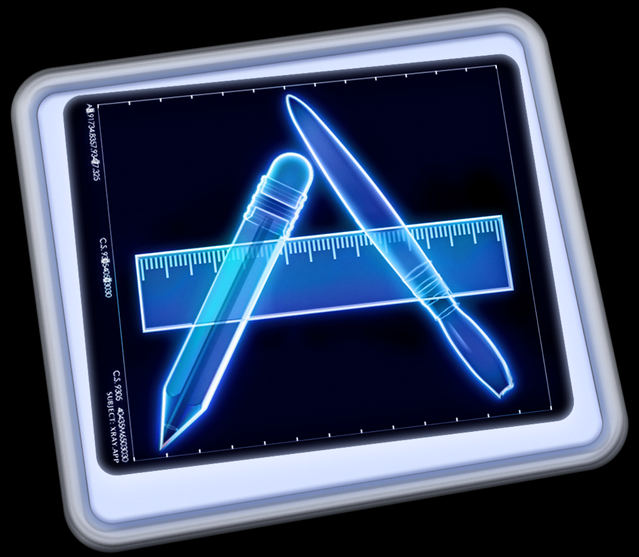


Profiling Background Fetch

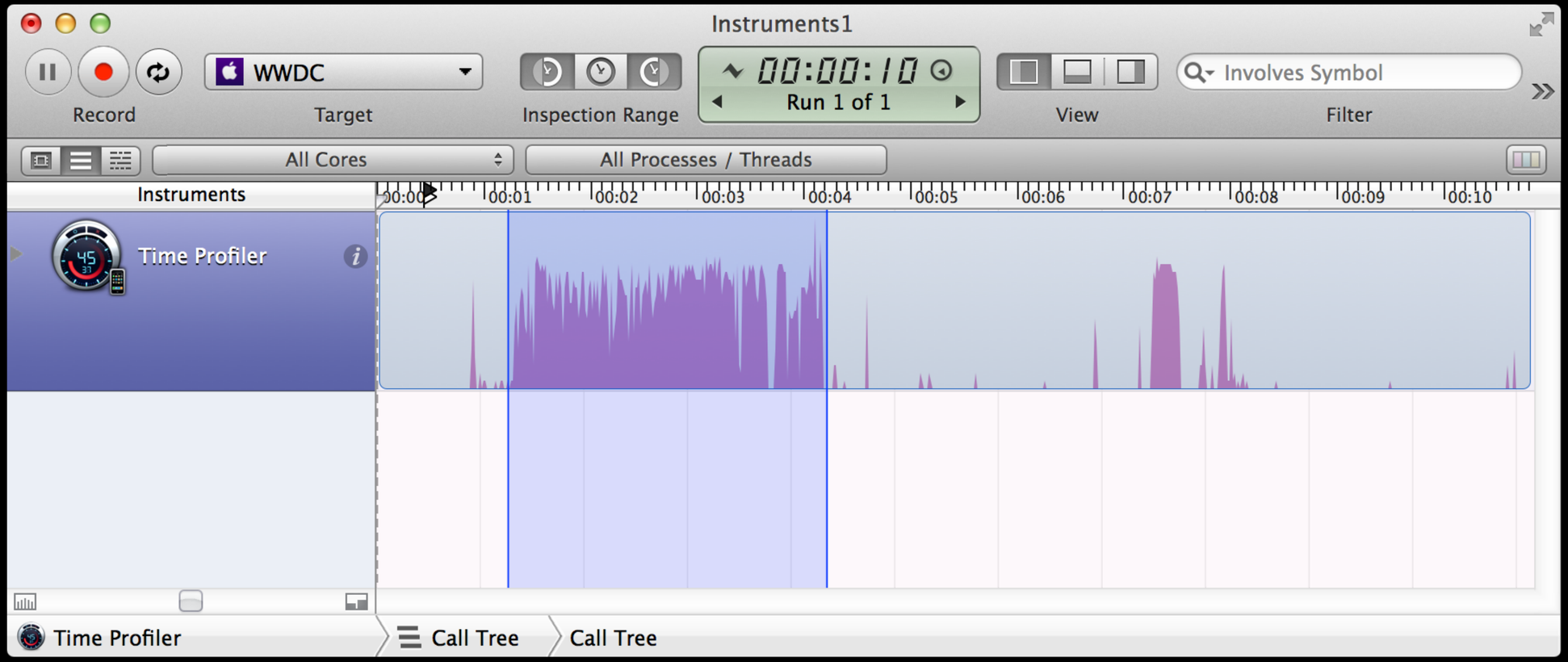
Call Trees



Profiling Background Fetch

Call Trees

CPU Strategy View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Run 1 of 1
View
Involves Symbol
Filter
All Cores
All Processes / Threads
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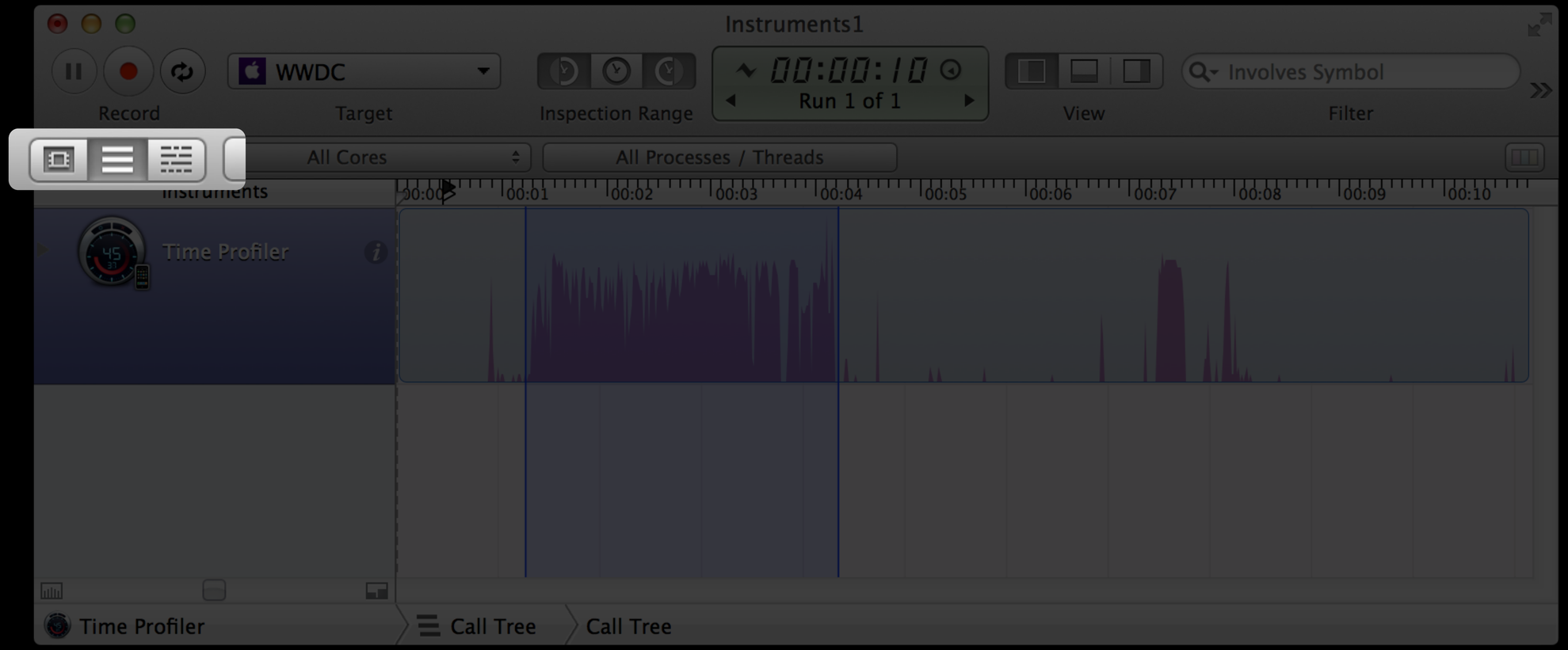
Call Tree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Call Tree
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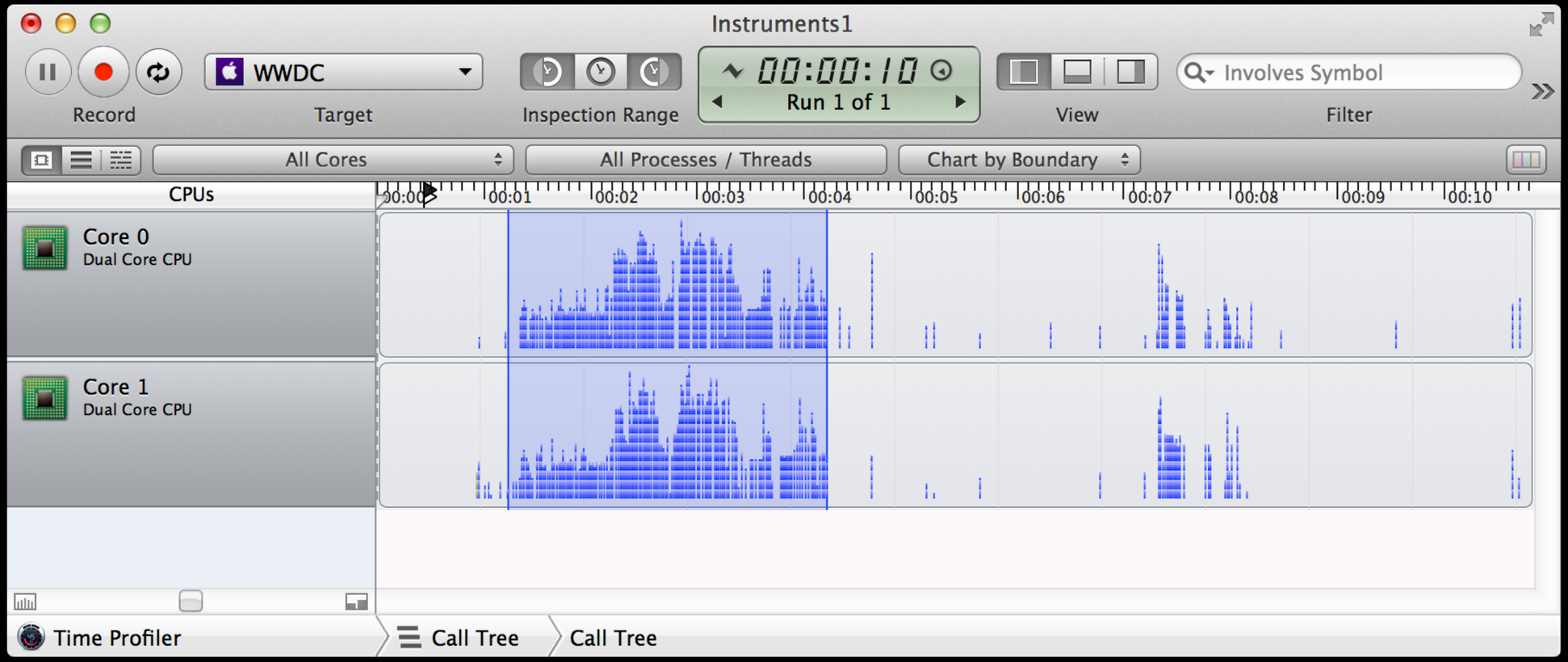
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Core 1
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Time Profiler
Call Tree
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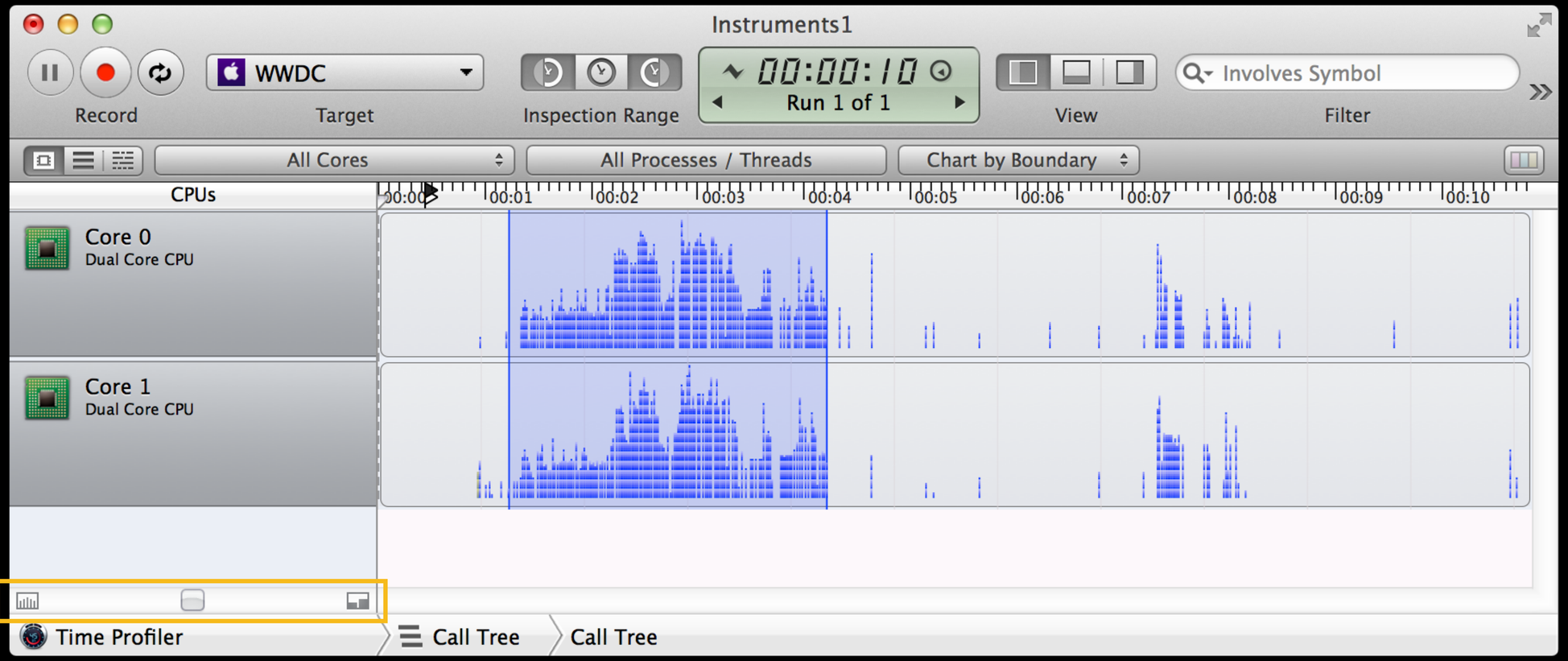
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All Processes / Threads
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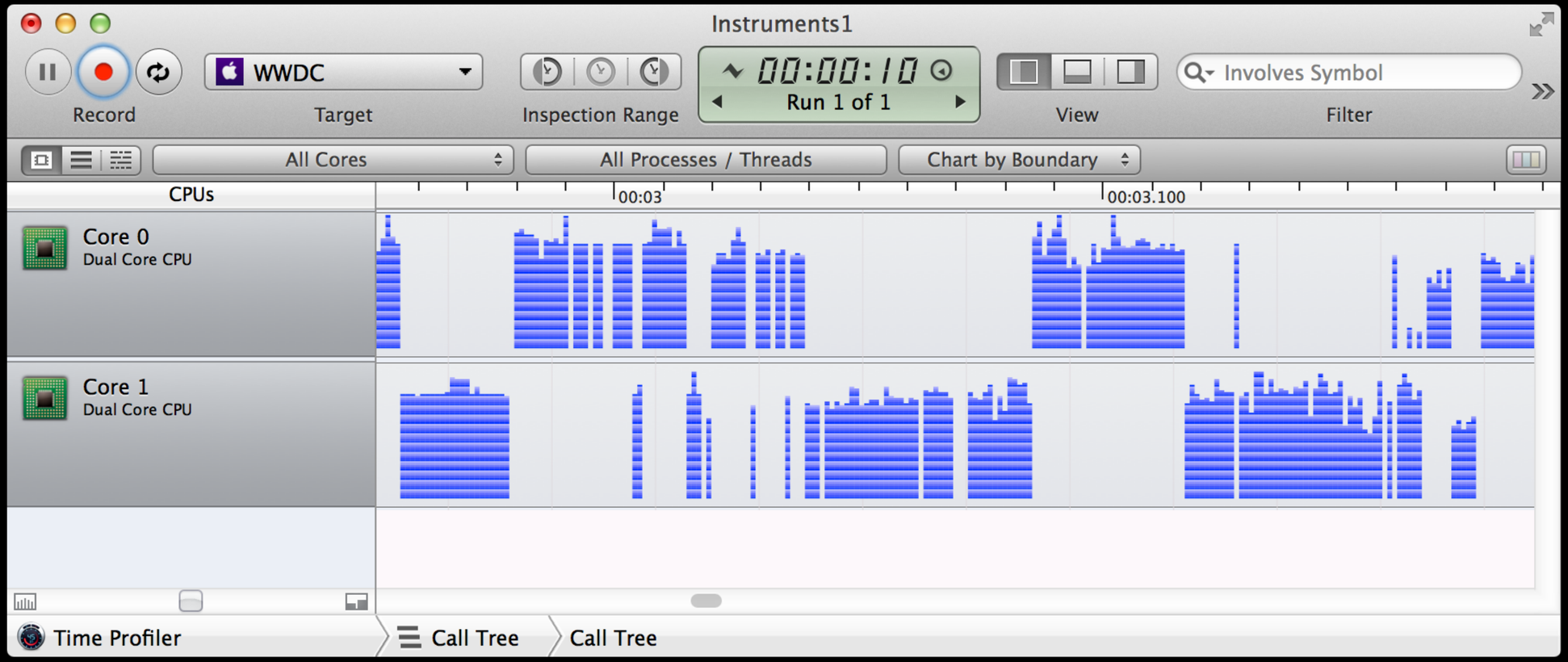
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All Cores
All Processes / Threads
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Core 1
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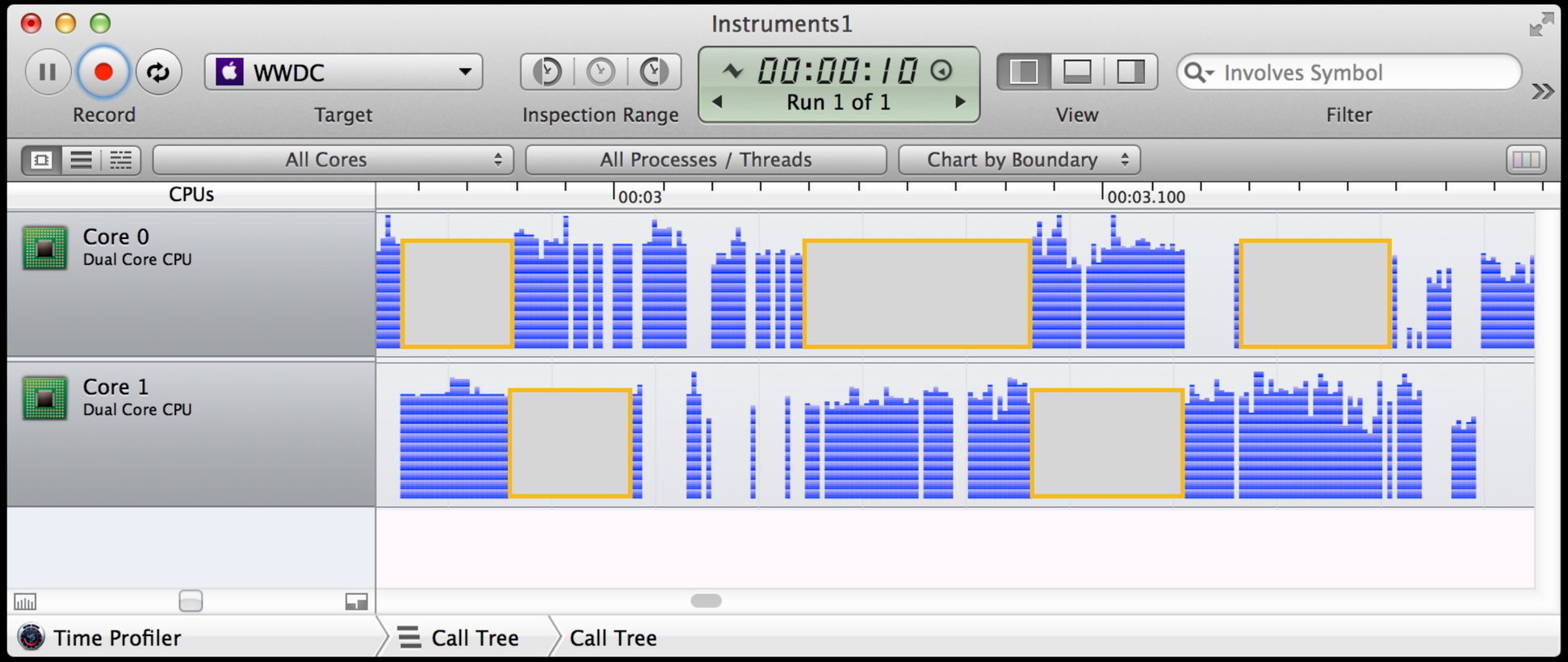
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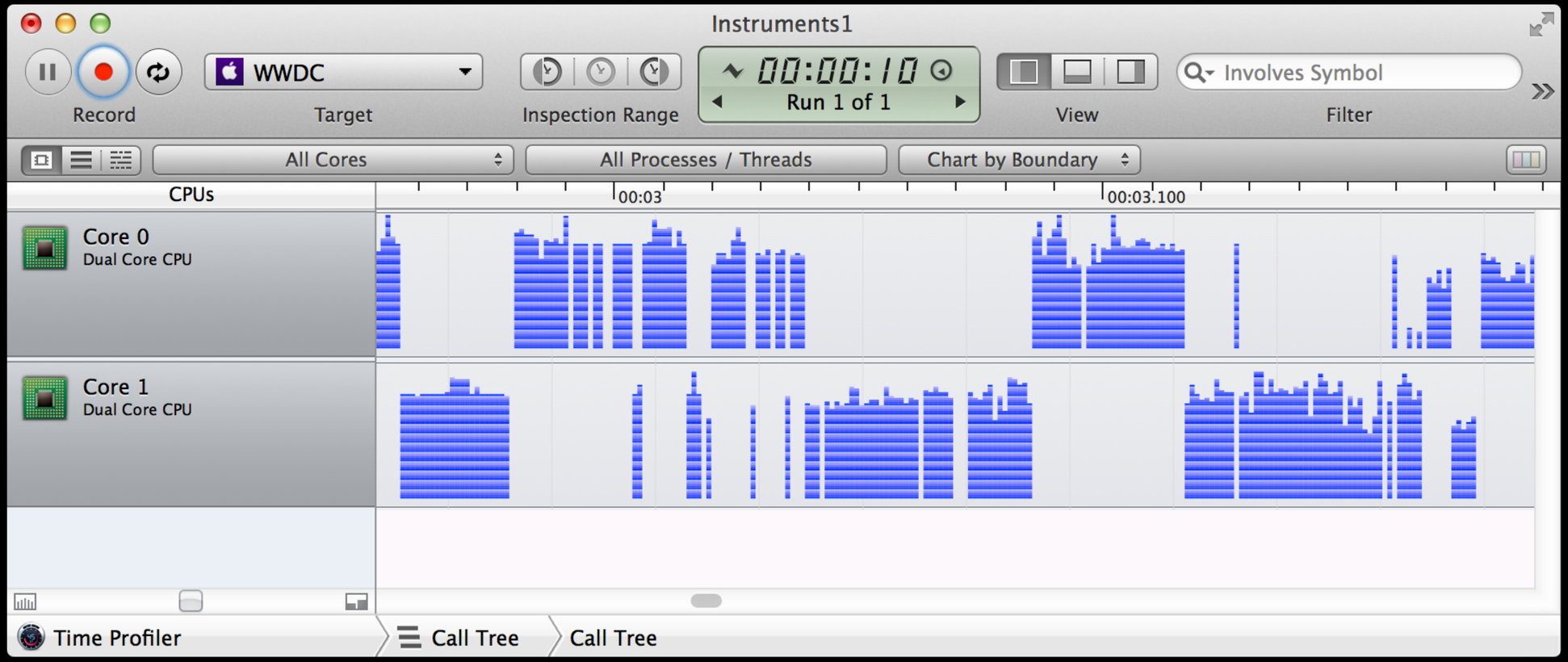
Instruments1
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Chart by Boundary
CPUs
00:03
00:03.100
Core 0
Dual Core CPU
Core 1
Dual Core CPU
Time Profiler
Call Tree
Call Tree

Object Enumeration

```
NSArray *myObjects = ...;

[myObjects enumerateObjectsWithOptions:0
           usingBlock:^(id obj, NSUInteger idx, BOOL *stop) {

    // do something with object

}];
```

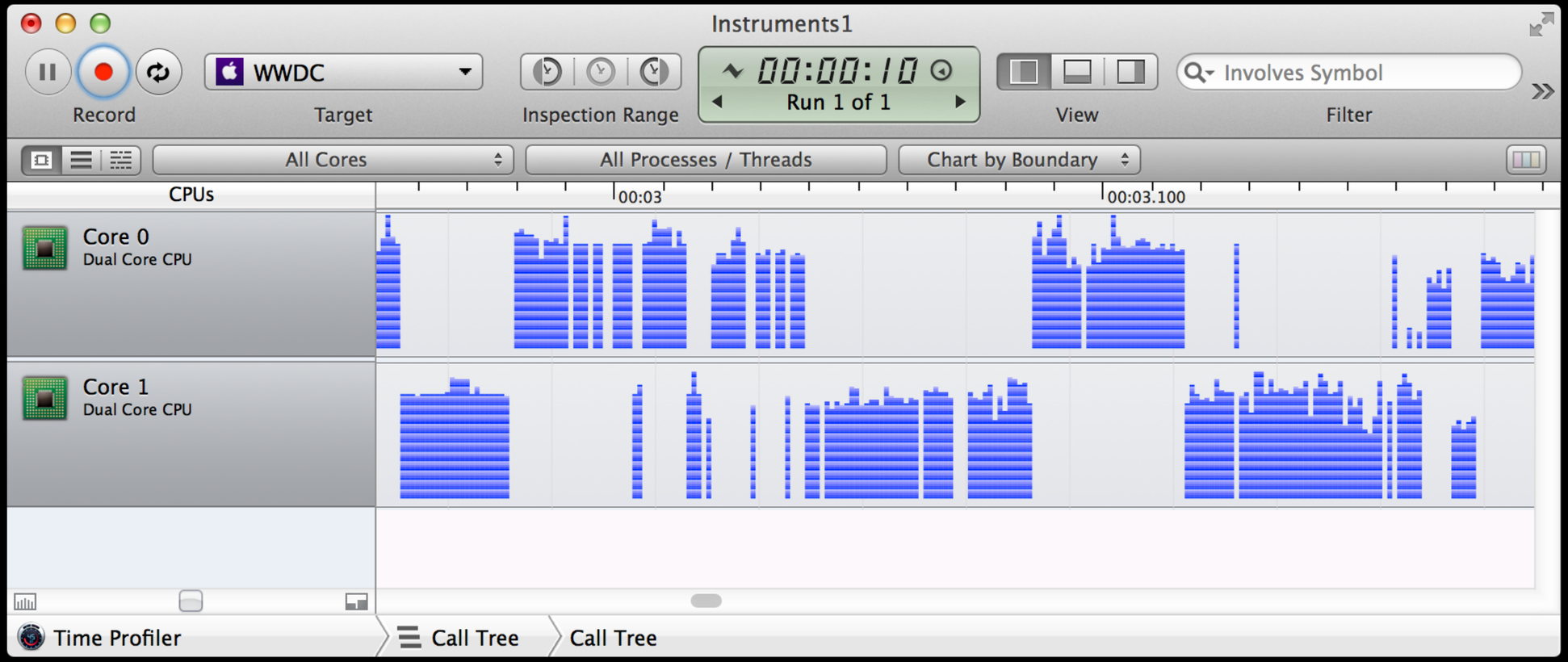
Concurrent Object Enumeration

```
NSArray *myObjects = ...;

[myObjects enumerateObjectsWithOptions:NSEnumerationConcurrent
           usingBlock:^(id obj, NSUInteger idx, BOOL *stop) {

    // do something with object

}];
```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CPUs
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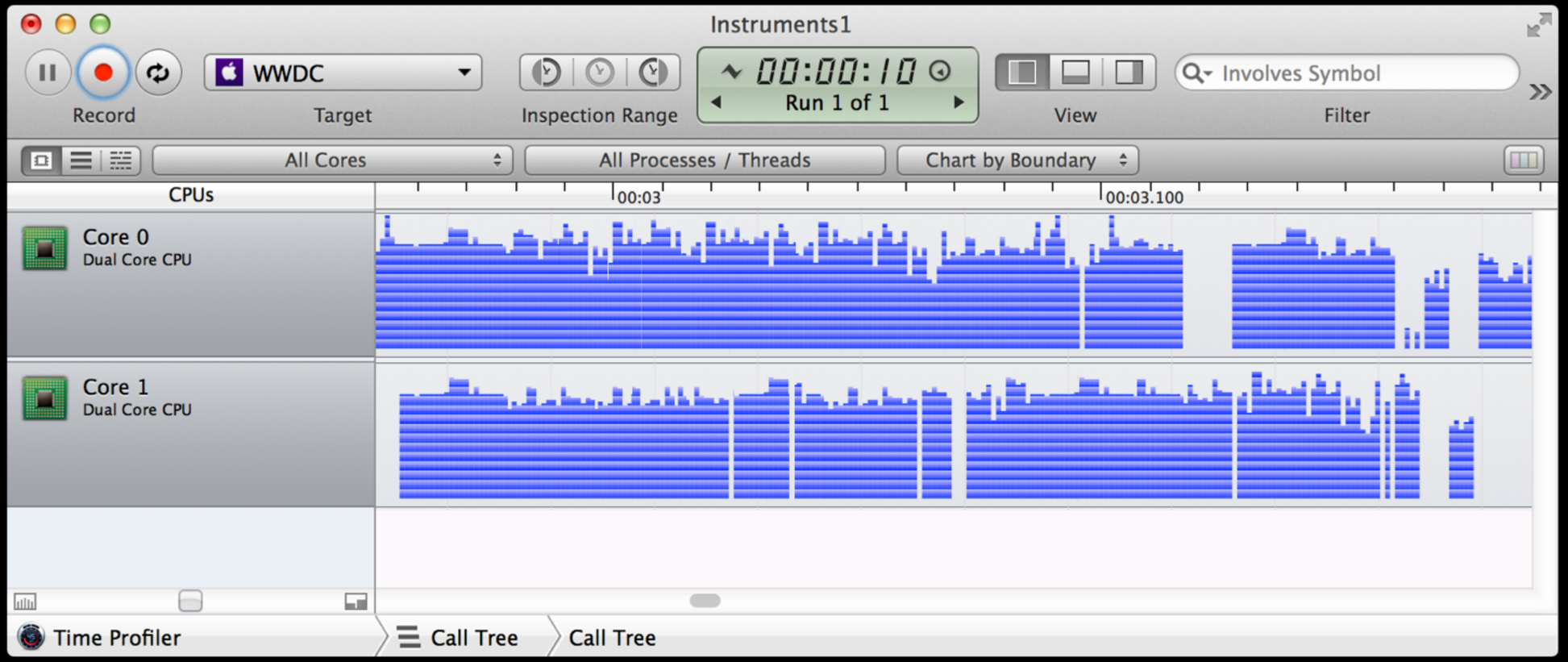
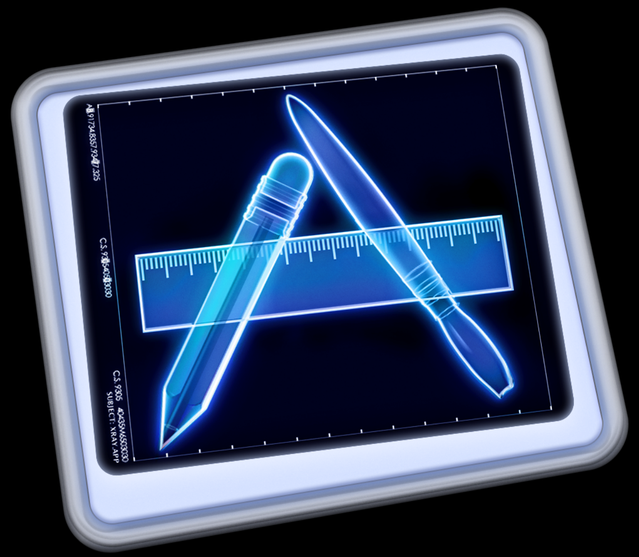
Core 0
Dual Core CPU
Core 1
Dual Core CPU
Time Profiler
Call Tree
Call Tree

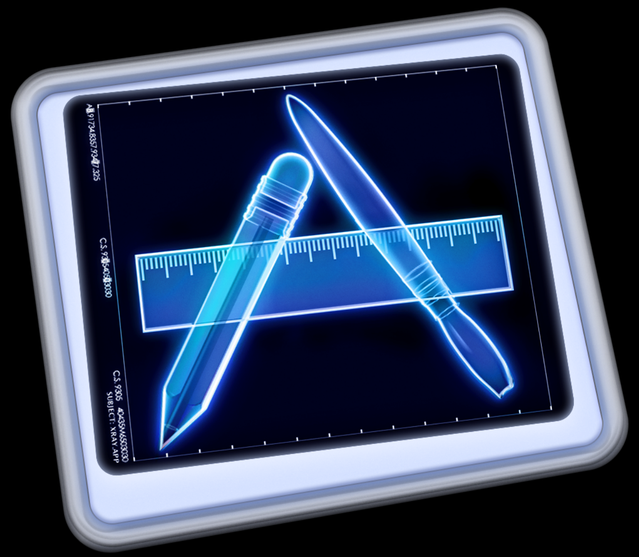

Instruments1
Record
WWDC
Target
Inspection Range
00:00:10
Run 1 of 1
View
Involves Symbol
Filter
All Cores
All Processes / Threads
Chart by Boundary
CPUs
00:03
00:03.100
Core 0
Dual Core CPU
Core 1
Dual Core CPU
Time Profiler
Call Tree
Call Tree



Profiling Background Fetch

Call Trees

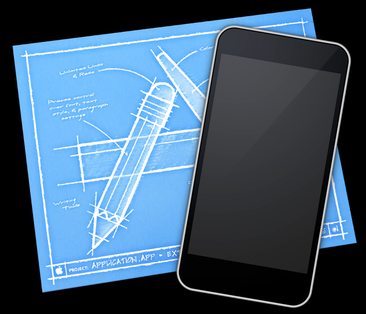
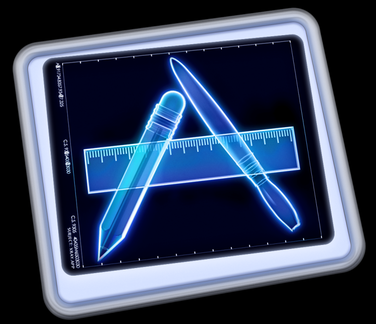
CPU Strategy View



Profiling Background Fetch

Call Trees

CPU Strategy View

URL Utilities

Foundation

URL utilities

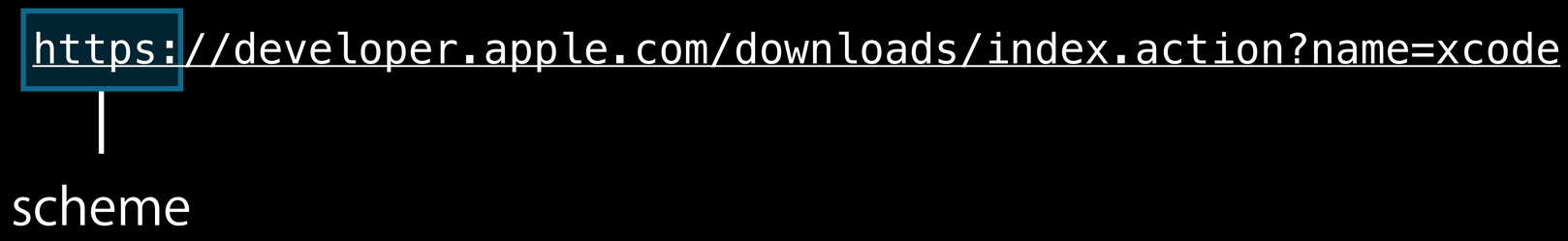
Foundation

URL utilities

https://developer.apple.com/downloads/index.action?name=xcode

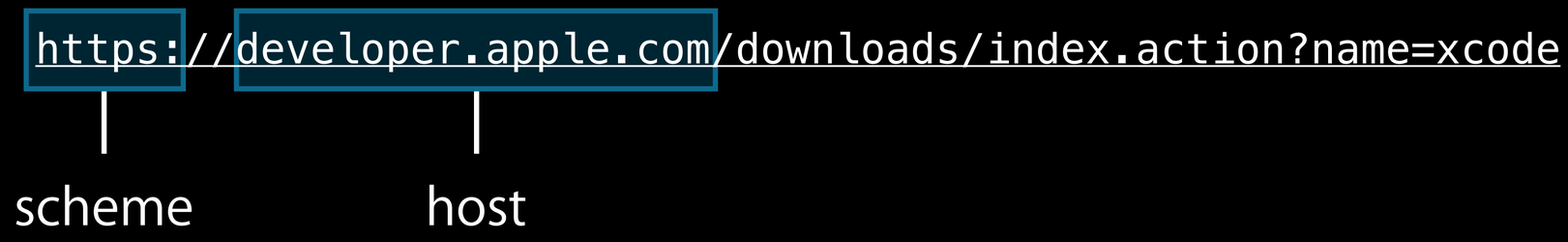
Foundation

URL utilities



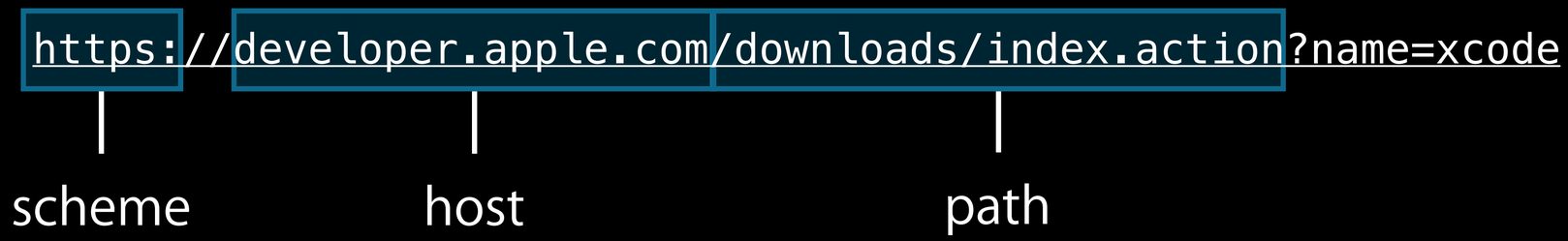
Foundation

URL utilities



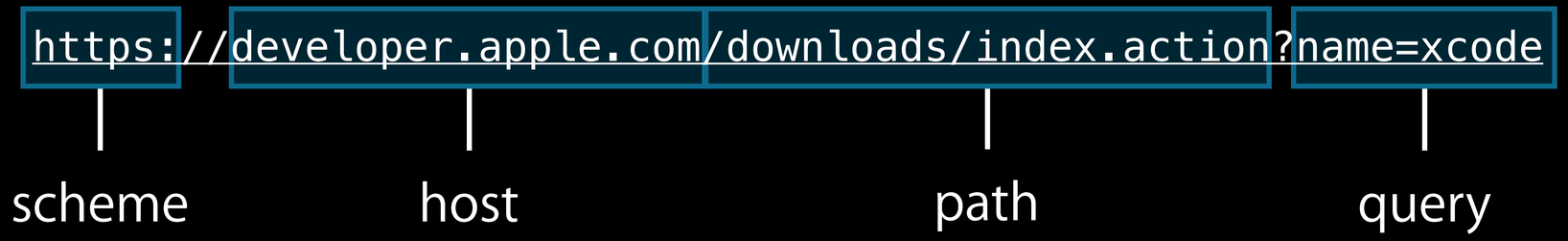
Foundation

URL utilities



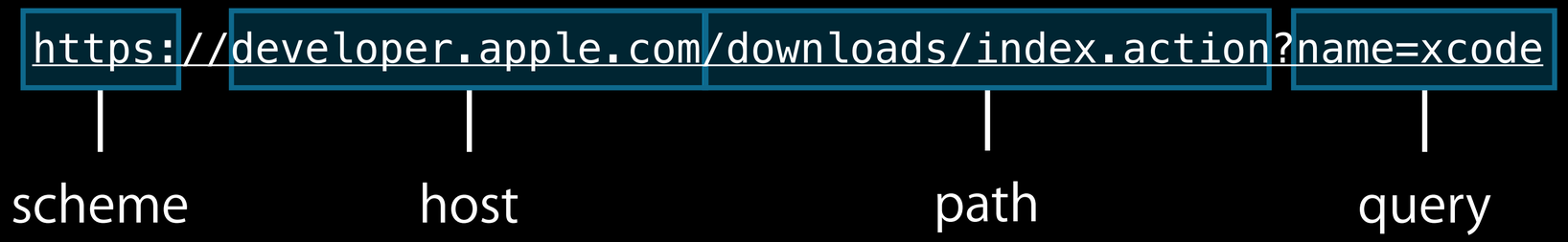
Foundation

URL utilities



Foundation

URL utilities



Foundation

URL and path utilities

Foundation

URL and path utilities

- NSURL.h and NSPathUtilities.h

Foundation

URL and path utilities

- NSURL.h and NSPathUtilities.h
- Categories for manipulating paths
  - Breaking URL or string into path components
  - Deleting or appending last component
  - Deleting or appending file extensions

Foundation

URL and path utilities

- NSURL.h and NSPathUtilities.h
- Categories for manipulating paths
  - Breaking URL or string into path components
  - Deleting or appending last component
  - Deleting or appending file extensions
- Use these instead of manually manipulating URLs or string paths

Foundation

NSURLComponents

Foundation

NSURLComponents

```
NSURLComponents *components = [[NSURLComponents alloc] init];
```

Foundation

NSURLComponents

```
NSURLComponents *components = [[NSURLComponents alloc] init];

components.scheme = @"https";
components.user = @"pmarcos";
components.password = @"seecret";
components.host = @"example.com";
components.path = @"/site/doc.html";
components.fragment = @"section3";
```

Foundation

NSURLComponents

```
NSURLComponents *components = [[NSURLComponents alloc] init];

components.scheme = @"https";
components.user = @"pmarcos";
components.password = @"seecret";
components.host = @"example.com";
components.path = @"/site/doc.html";
components.fragment = @"section3";

NSURL *url = components.url;
```

```
https://pmarcos:seecret@example.com/site/doc.html#section3
```

Foundation

NSURLComponents

Foundation

NSURLComponents

```
NSURLComponents *components;

components = [NSURLComponents componentsWithString:
                    @"https://pmarcos:seecret@example.com/site/doc.html#section3"];
```

Foundation

NSURLComponents

```
NSURLComponents *components;

components = [NSURLComponents componentsWithString:
                    @"https://pmarcos:seecret@example.com/site/doc.html#section3"];

components.password = @"s33cret 🐷";
```

Foundation

NSURLComponents

```
NSURLComponents *components;

components = [NSURLComponents componentsWithString:
                  @"https://pmarcos:seecret@example.com/site/doc.html#section3"];

components.password = @"s33cret 🐷";

NSURL *secretPigFaceURL = components.URL;
```

```
https://pmarcos:s33cret%F0%9F%90%B7@example.com/site/doc.html#section3
```

URL Utilities

URL Utilities

Formatting Byte Counts

Foundation

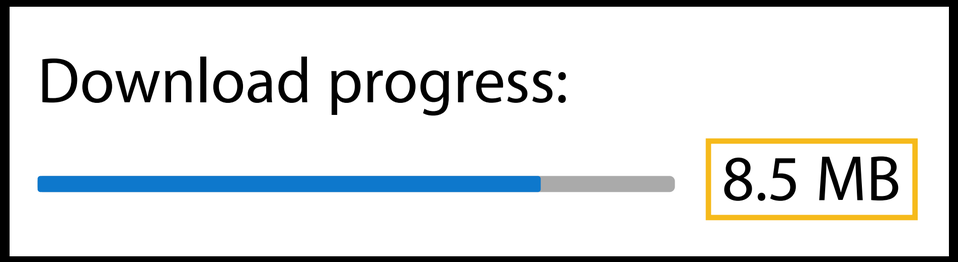
NSByteCountFormatter

Foundation

NSByteCountFormatter

Foundation

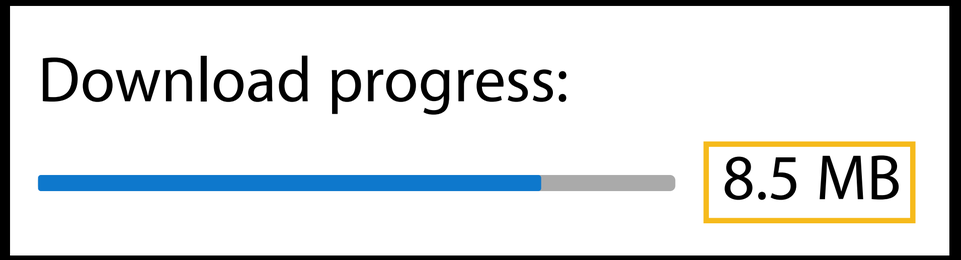
NSByteCountFormatter



Foundation

NSByteCountFormatter

- Easily format sizes
- Locale correct
- Customizable units



Foundation

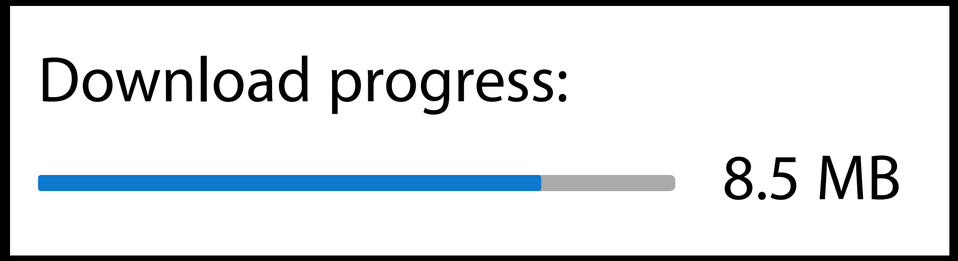
NSByteCountFormatter

```
long long count = 8765432;

NSByteCountFormatter *formatter;
NSString *value;

formatter = [[NSByteCountFormatter alloc] init];

value = [formatter stringFromByteCount:count];
```



URL Utilities

Formatting Byte Counts

URL Utilities

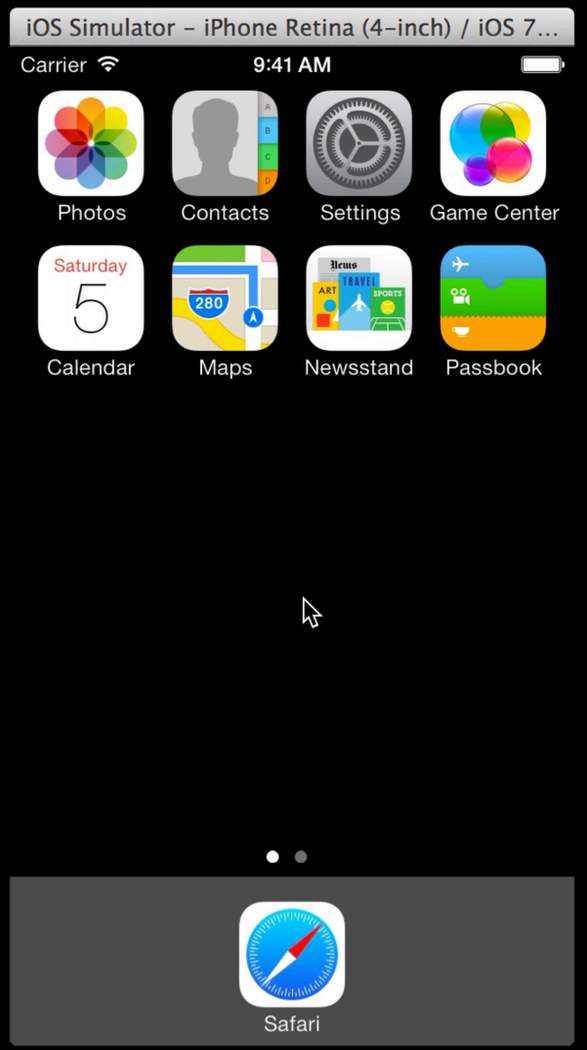
Formatting Byte Counts

Localization

Localization

Changing languages

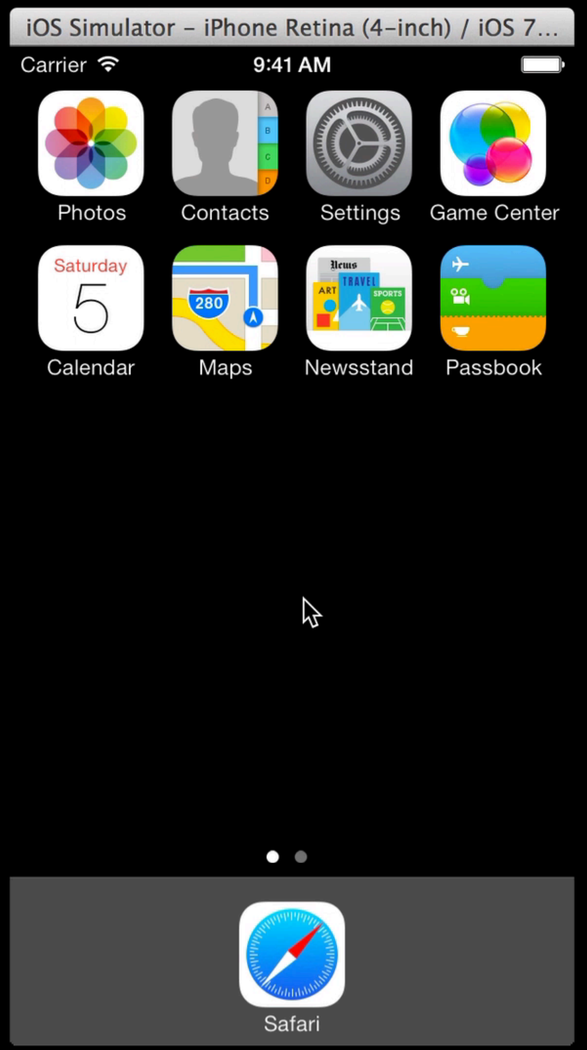
- Time consuming
- Resets entire environment
- Heavy solution for quick testing



Localization

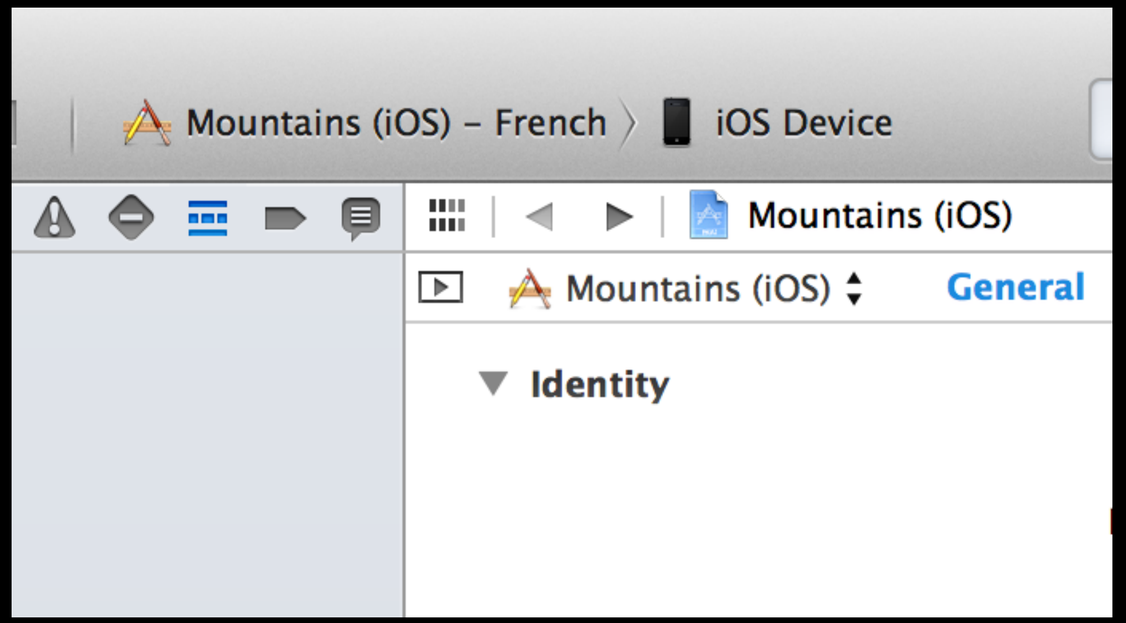
Changing languages

- Time consuming
- Resets entire environment
- Heavy solution for quick testing



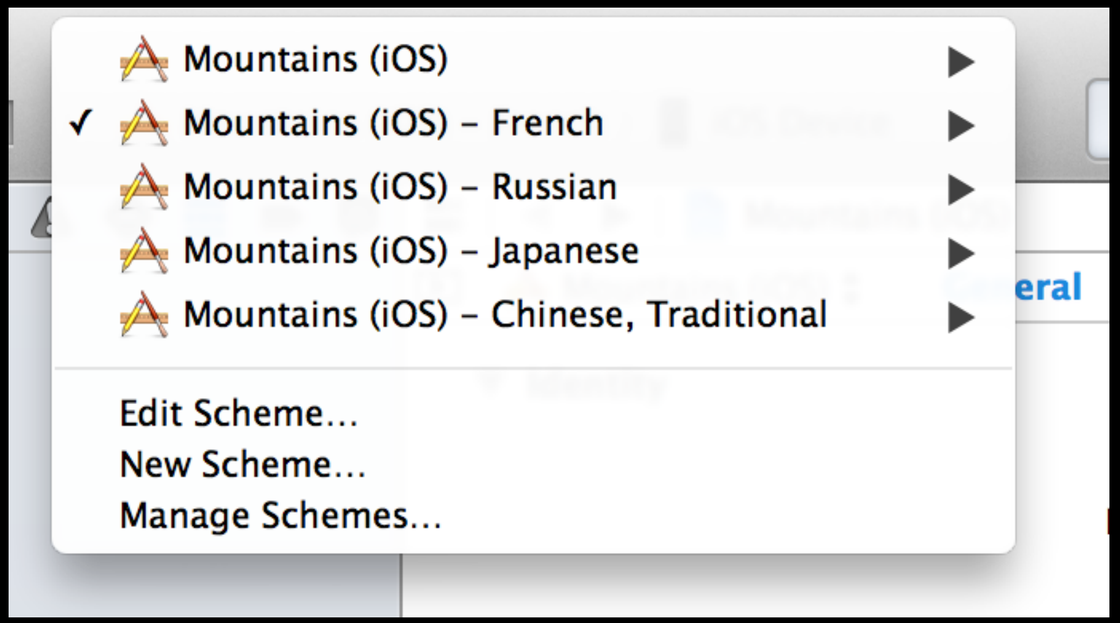
Localization

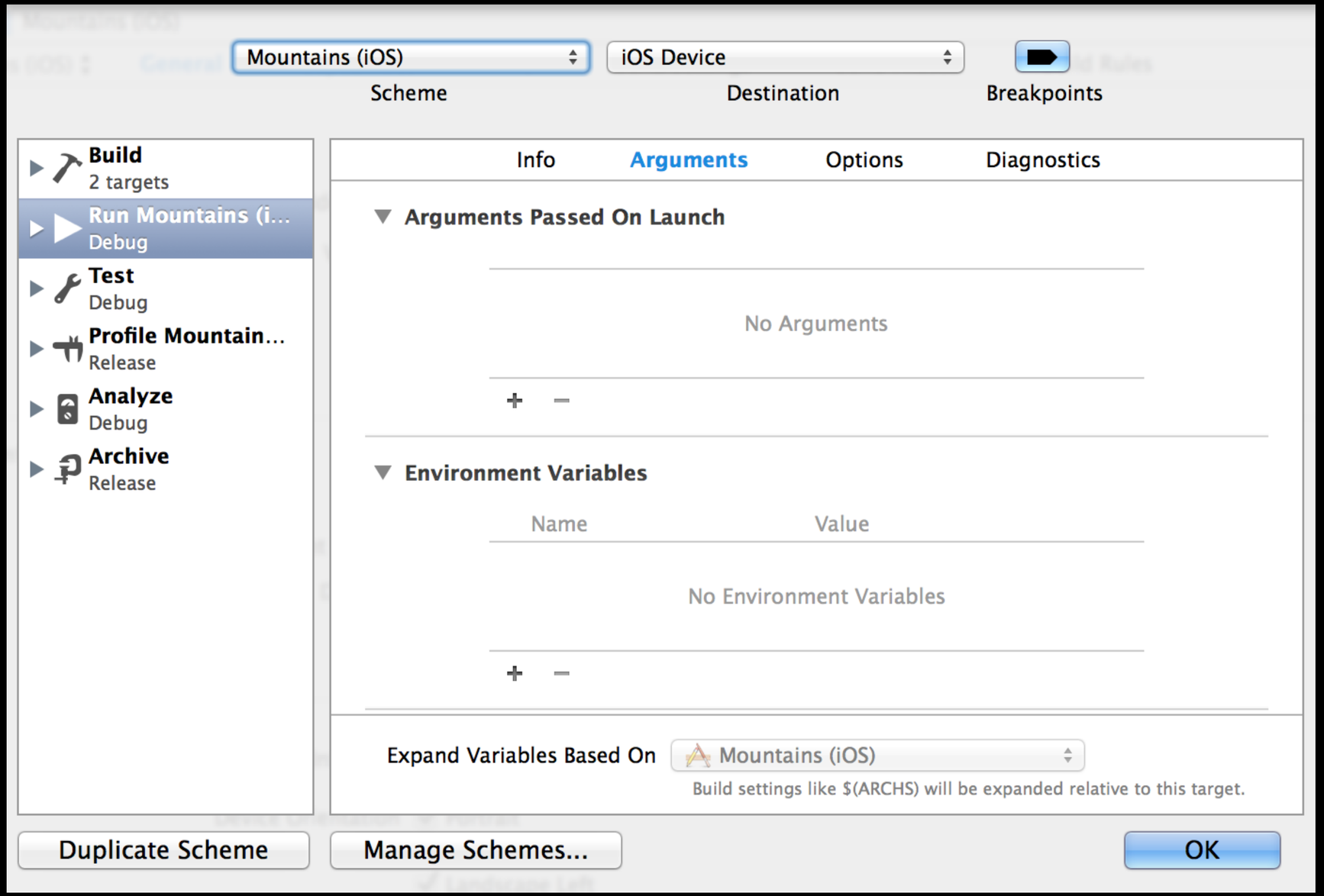
Changing languages

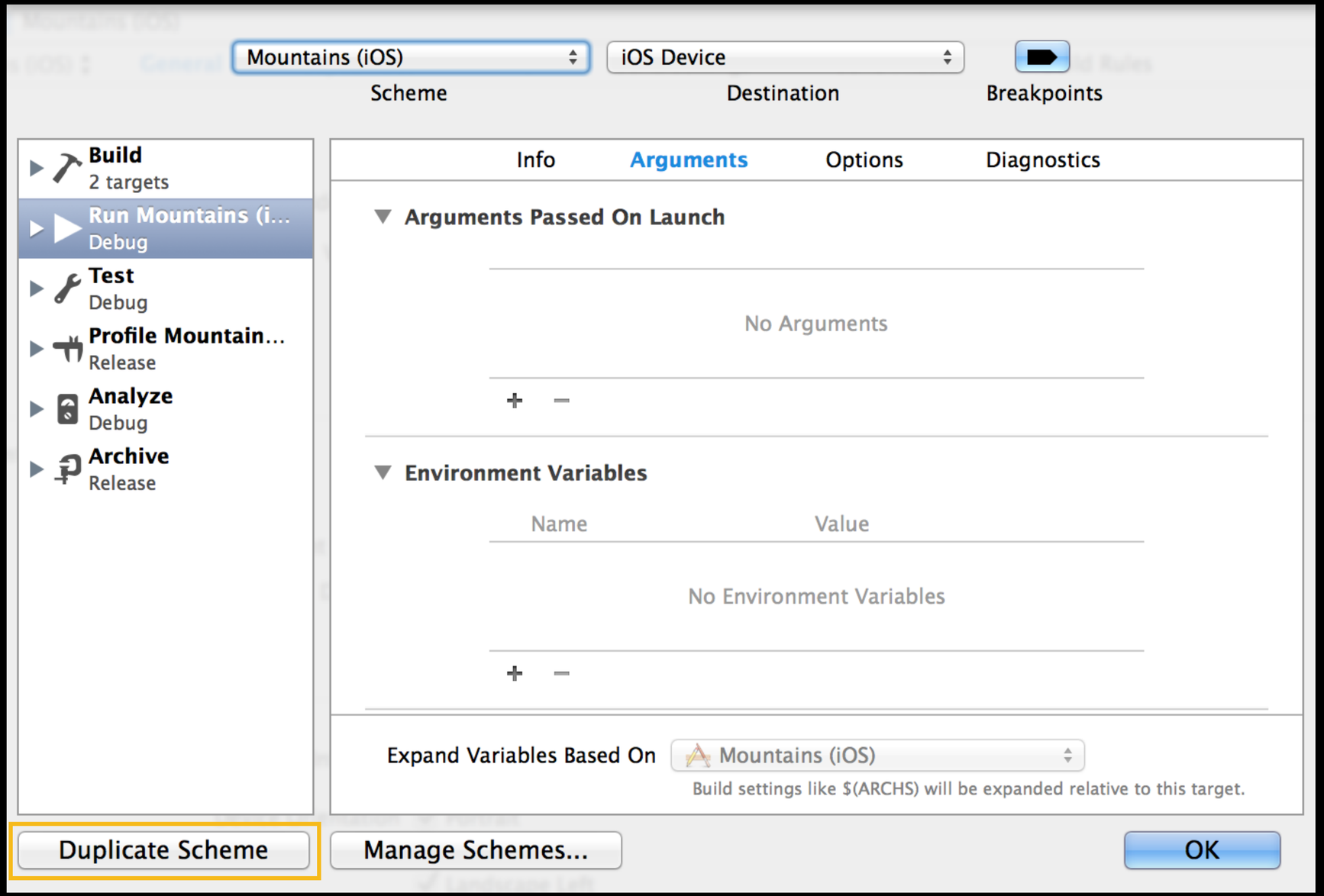


Localization

Changing languages




Mountains (iOS)
Scheme
iOS Device
Destination
Breakpoints
Build
2 targets
Run Mountains (i...
Debug
Test
Debug
Profile Mountain...
Release
Analyze
Debug
Archive
Release
Info
Arguments
Options
Diagnostics
Arguments Passed On Launch
No Arguments
Environment Variables
Name
Value
No Environment Variables
Expand Variables Based On
Mountains (iOS)
Build settings like $(ARCHS) will be expanded relative to this target.
Duplicate Scheme
Manage Schemes...
OK


Mountains (iOS)
Scheme
iOS Device
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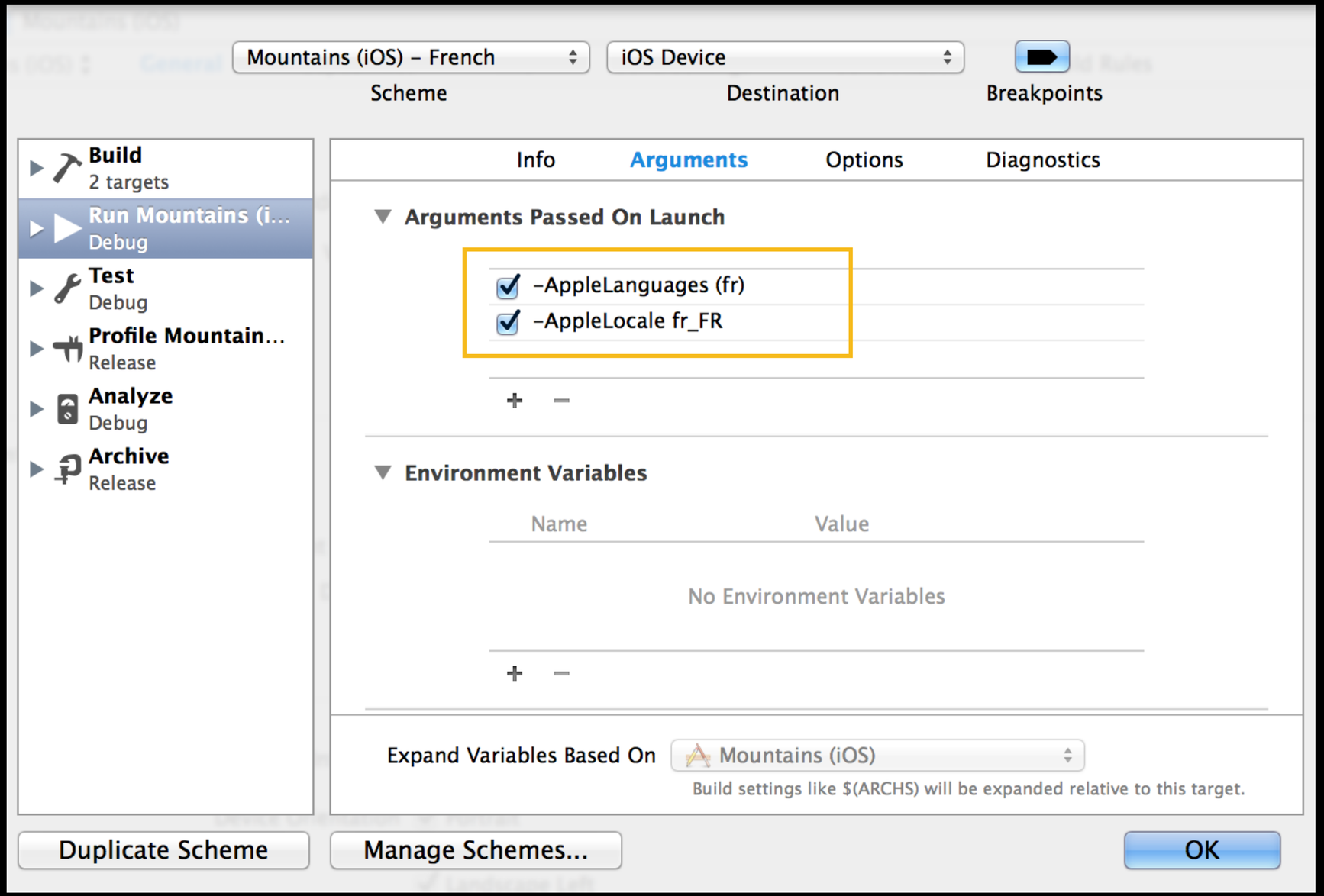
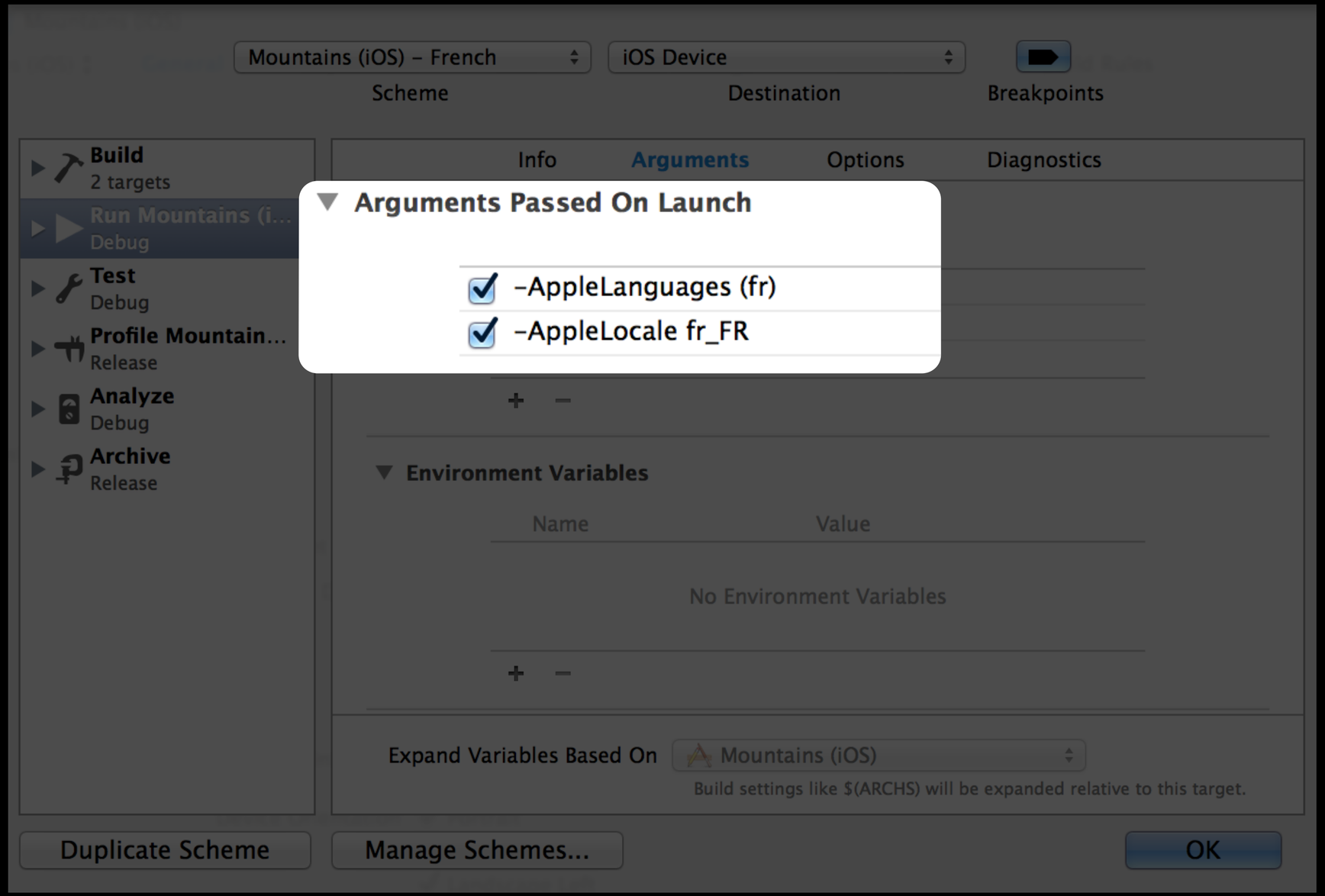
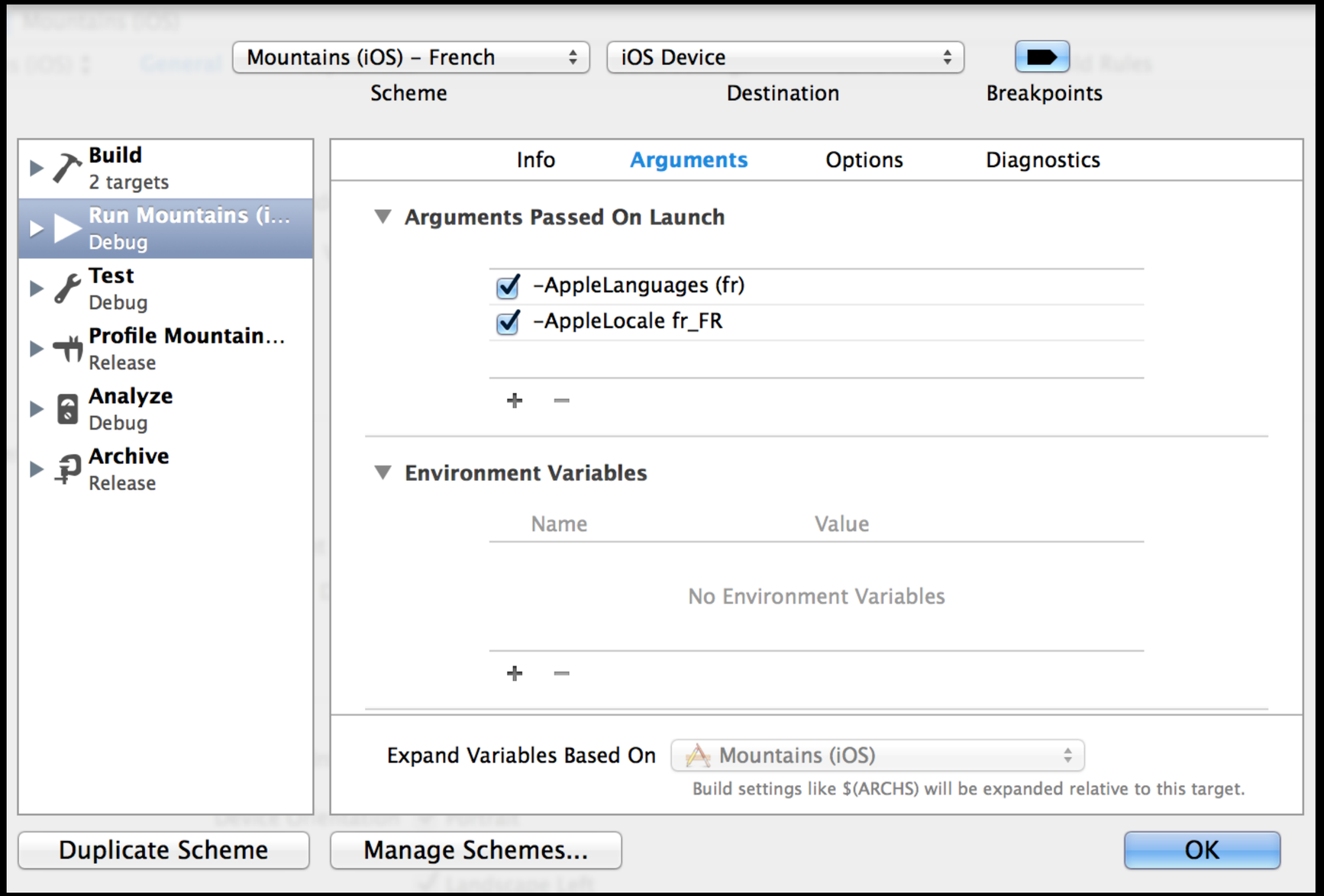
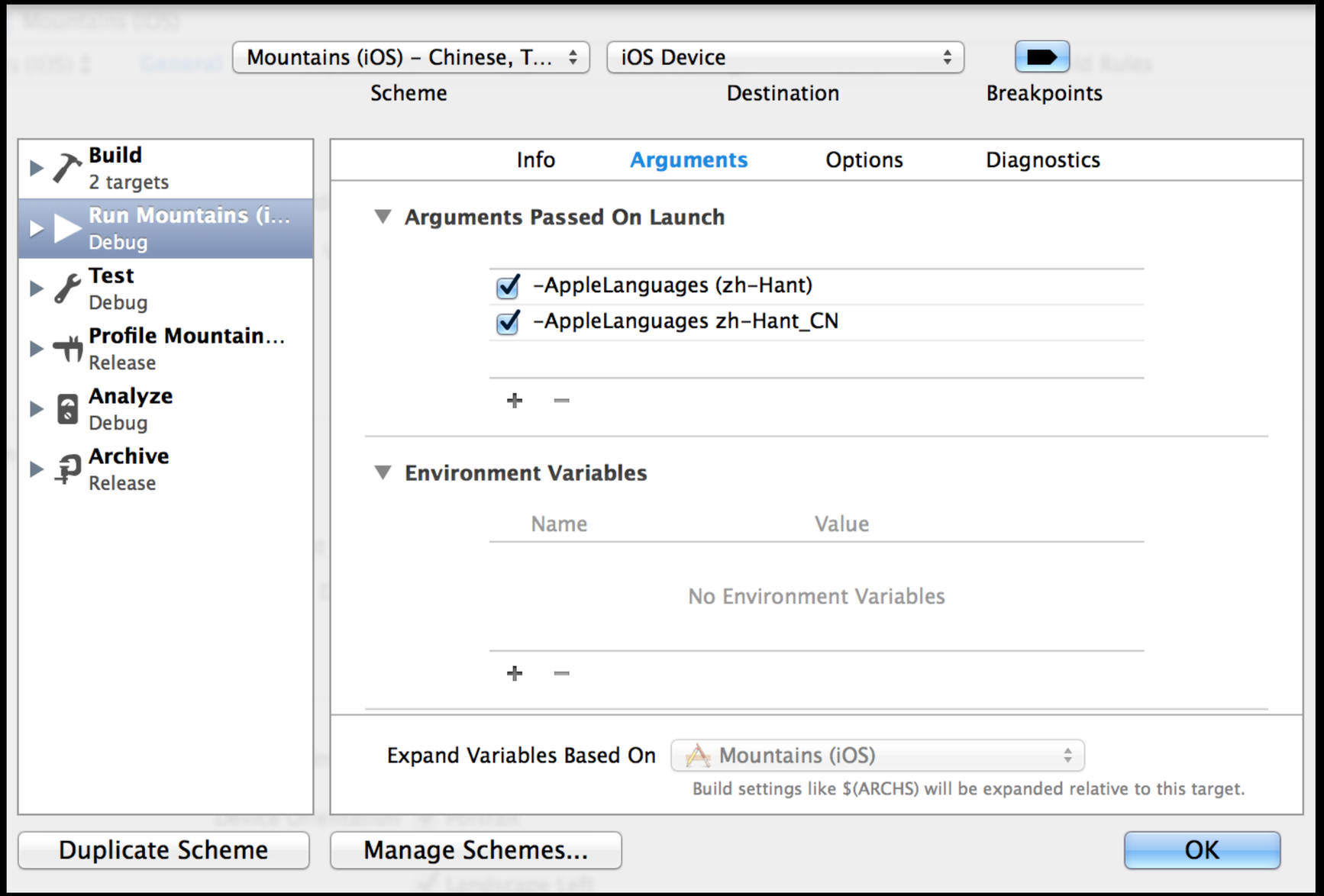
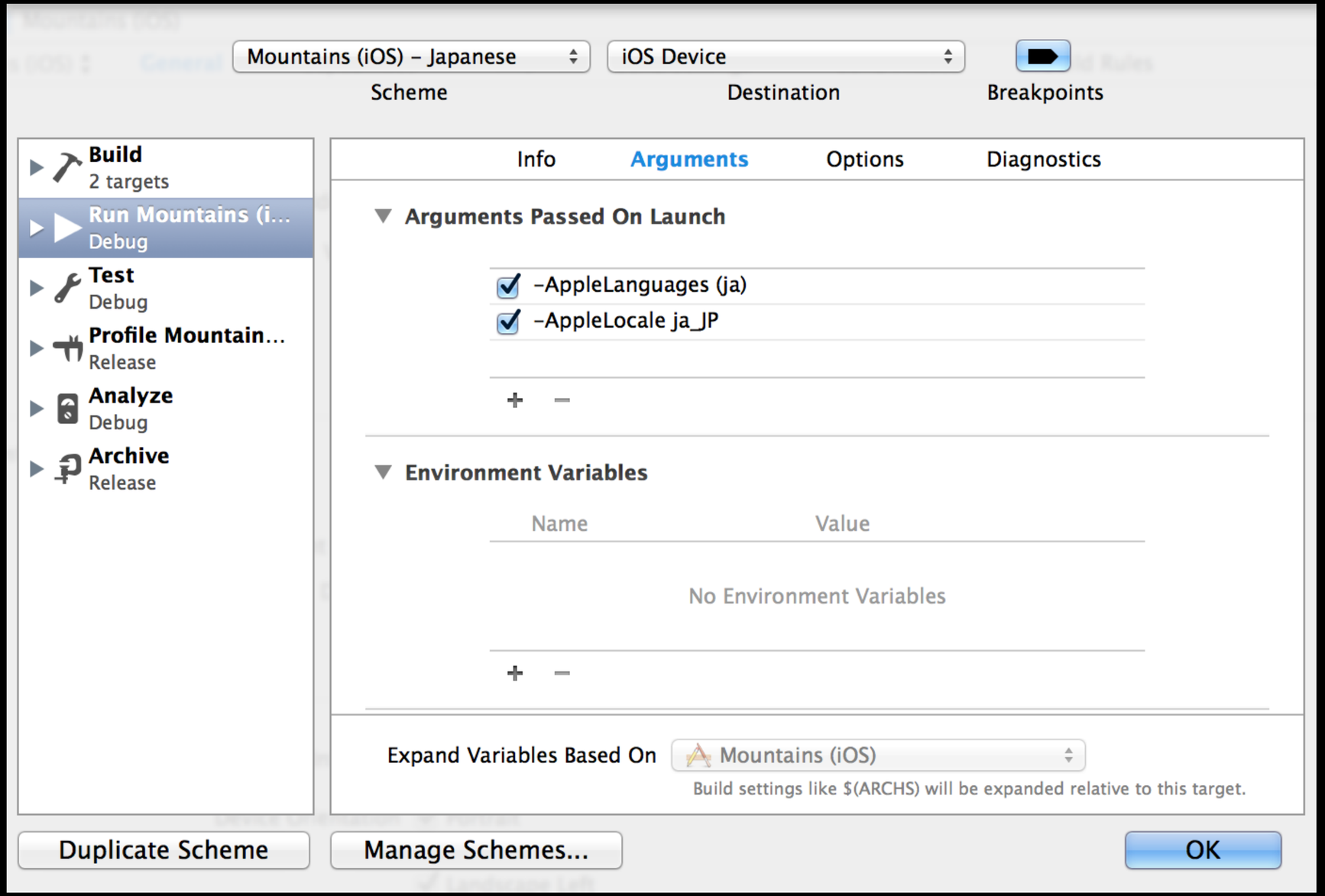
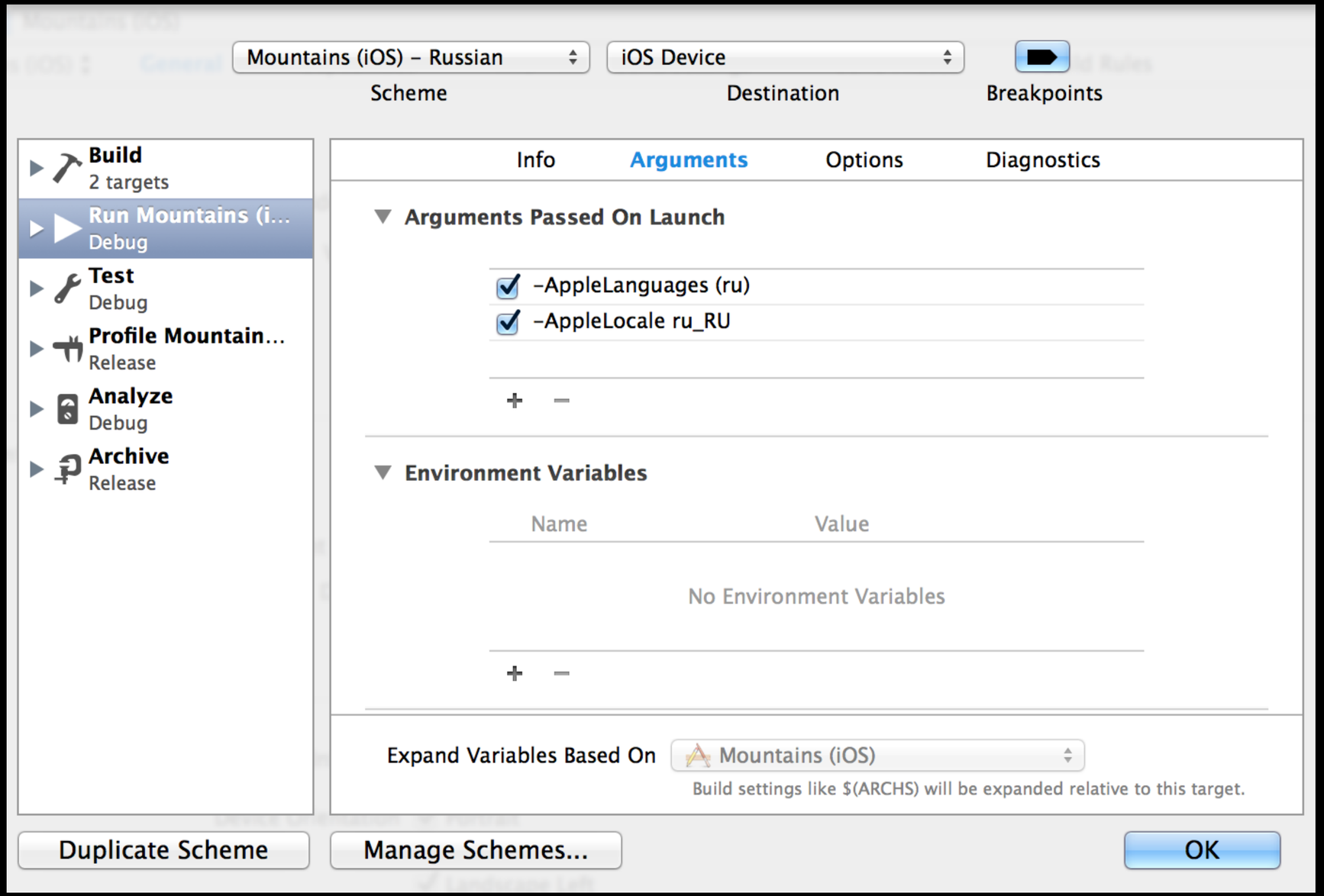

Mountains (iOS) – French
Scheme
iOS Device
Destination
Breakpoints
Build
2 targets
Run Mountains (i...
Debug
Test
Debug
Profile Mountain...
Release
Analyze
Debug
Archive
Release
Info
Arguments
Options
Diagnostics
Arguments Passed On Launch
-AppleLanguages (fr)
-AppleLocale fr_FR
Environment Variables
Name
Value
No Environment Variables
Expand Variables Based On
Mountains (iOS)
Build settings like $(ARCHS) will be expanded relative to this target.
Duplicate Scheme
Manage Schemes...
OK


Mountains (iOS) – French
iOS Device
Scheme
Destination
Breakpoints
Build
2 targets
Run Mountains (i...
Debug
Test
Debug
Profile Mountain...
Release
Analyze
Debug
Archive
Release
Info
Arguments
Options
Diagnostics
Arguments Passed On Launch
-AppleLanguages (fr)
-AppleLocale fr_FR
Environment Variables
Name
Value
No Environment Variables
Expand Variables Based On
Mountains (iOS)
Build settings like $(ARCHS) will be expanded relative to this target.
Duplicate Scheme
Manage Schemes...
OK


Mountains (iOS) – French
iOS Device
Scheme
Destination
Breakpoints
Build
2 targets
Run Mountains (i…
Debug
Test
Debug
Profile Mountain…
Release
Analyze
Debug
Archive
Release
Info
Arguments
Options
Diagnostics
Arguments Passed On Launch
-AppleLanguages (fr)
-AppleLocale fr_FR
Environment Variables
Name
Value
No Environment Variables
Expand Variables Based On
Mountains (iOS)
Build settings like $(ARCHS) will be expanded relative to this target.
Duplicate Scheme
Manage Schemes...
OK

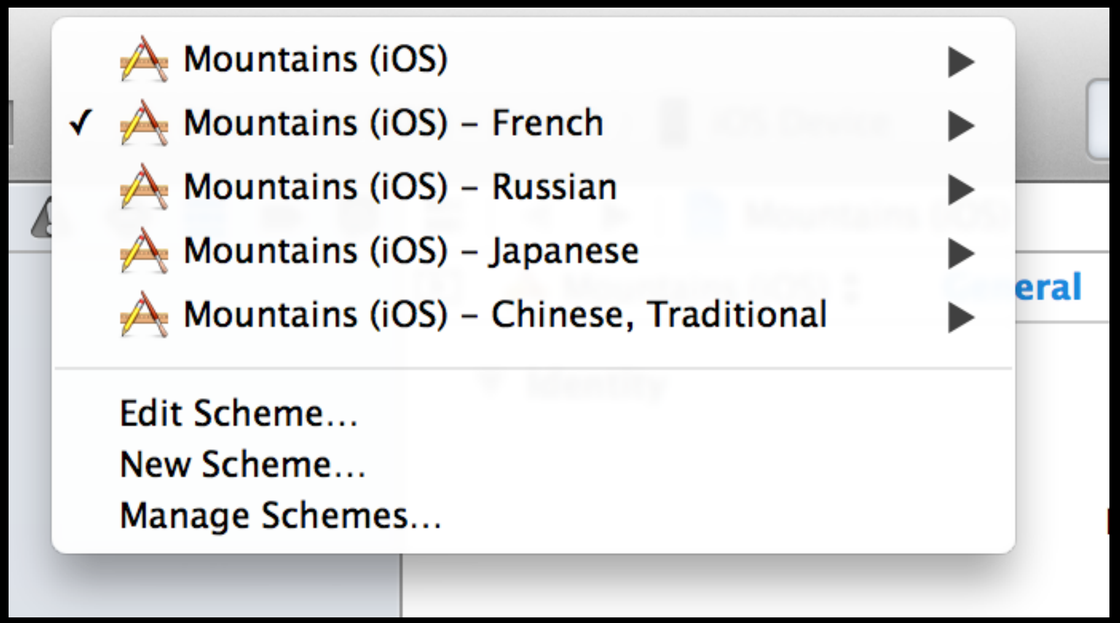

Mountains (iOS) – Chinese, T...
iOS Device
Scheme
Destination
Breakpoints
Build
2 targets
Run Mountains (i...
Debug
Test
Debug
Profile Mountain...
Release
Analyze
Debug
Archive
Release
Info
Arguments
Options
Diagnostics
Arguments Passed On Launch
-AppleLanguages (zh-Hant)
-AppleLanguages zh-Hant_CN
Environment Variables
Name
Value
No Environment Variables
Expand Variables Based On
Mountains (iOS)
Build settings like $(ARCHS) will be expanded relative to this target.
Duplicate Scheme
Manage Schemes...
OK


Mountains (iOS) – Japanese
Scheme
iOS Device
Destination
Breakpoints
Build
2 targets
Run Mountains (i...
Debug
Test
Debug
Profile Mountain...
Release
Analyze
Debug
Archive
Release
Info
Arguments
Options
Diagnostics
Arguments Passed On Launch
-AppleLanguages (ja)
-AppleLocale ja_JP
Environment Variables
Name
Value
No Environment Variables
Expand Variables Based On
Mountains (iOS)
Build settings like $(ARCHS) will be expanded relative to this target.
Duplicate Scheme
Manage Schemes...
OK


Mountains (iOS) – Russian
Scheme
iOS Device
Destination
Breakpoints
Build
2 targets
Run Mountains (i...
Debug
Test
Debug
Profile Mountain...
Release
Analyze
Debug
Archive
Release
Info
Arguments
Options
Diagnostics
Arguments Passed On Launch
-AppleLanguages (ru)
-AppleLocale ru_RU
Environment Variables
Name
Value
No Environment Variables
Expand Variables Based On
Mountains (iOS)
Build settings like $(ARCHS) will be expanded relative to this target.
Duplicate Scheme
Manage Schemes...
OK

Localization

Changing languages



URL Utilities

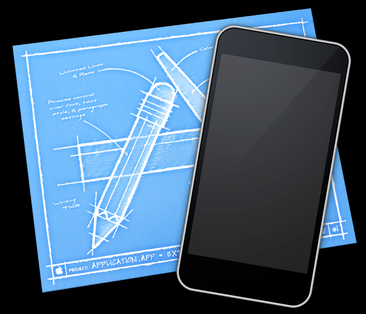
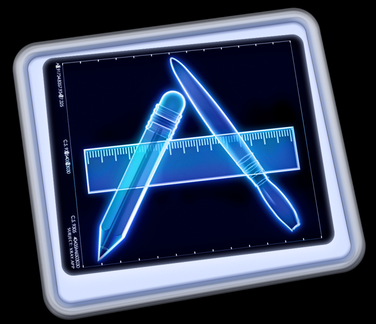
Formatting Byte Counts

Localization

URL Utilities

Formatting Byte Counts

Localization

Thank you!